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NTA

UGC

SESSION  
2023

# NET/JRF/SET ECONOMICS

handbook

ALMEN 09906837425

HILAL

- As per Updated Syllabus Applicable From June, 2019 Onwards.
- Includes a quick Recap of the Important theoretical concepts

Key Notes

Terms

Definitions

Summary Notes

Points to Remember



Dawn

HILAL AHMAD

**PREFACE**

I am glad indeed to place this title 4<sup>TH</sup> EDITION NTA NET ECONOMICS in the hands of those students who are preparing for NTA exam.

This book is written strictly according to the prescribed syllabus. In preparing this book, I have freely drawn the material both from the books of Indian & foreign authors.

The book is divided into 7 units.

I request every teacher and the taught to bring such mistakes to the notice of the author so that they can be redressed in the next edition.

I welcome every constructive suggestion that goes in improving the quality of the work and the utility of the book.

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## UNIT-1

# MICRO-ECONOMIC ANALYSIS

**Business economics** is an applied economics. Economics is the study of human beings (e.g., consumers, firms) in producing and consuming goods and services in the midst of scarcity of resources. Managerial or business economics is an applied branch of organizing and allocating a firm's scarce resources to achieve its desired goals.

**Managerial economics** or **business economics** is economics applied in decision-making. Business economics, thus, interweaves economic principles and business. Business managers apply economic laws and principles while presenting business problems and their ways of solutions. Thus, business economics can be defined as the application of economic analysis to business problems faced by an enterprise. It provides a link between economic theory and the decision sciences in the analysis of managerial decision-making. It relies heavily on traditional economics and decision sciences.

Identification of the problems and the solving of the problems are the two crucial elements of decision-making of a business firm. Business economists help business managers in making sound business decisions. Business success, in fact, greatly depends on appropriate business decisions. However, appropriate decision-making is not an easy job in this changing world.

### Demand and Elasticity of Demand

#### Concept of Demand And Supply:

Supply and demand is perhaps one of the most fundamental concepts of economics and it is the backbone of a market economy. Demand refers to how much (quantity) of a product or service is desired by buyers. The quantity demanded is the amount of a product people are willing to buy at a certain price; the relationship between price and quantity demanded is known as the demand relationship. Supply represents how much the market can offer. The quantity supplied refers to the amount of a certain good producers are willing to supply when receiving a certain price. The correlation between price and how much of a good or service is supplied to the market is known as the supply relationship. Price, therefore, is a reflection of supply and demand

**Demand:** The demand for any commodity at a given price is the quantity of it which will be bought per unit of time at that price.

**Elements of Demand :** According to the definition of demand here are three elements of demand for a commodity :-

- (i) There should be a desire for a commodity.
- (ii) The consumer should have money to fulfill that desire.
- (iii) The consumer should be ready to spend money on that commodity.

Thus we can define demand as the desire to buy a commodity which is backed by sufficient purchasing power and a willingness to spend.

There are many economic, social and political factors which greatly influence the demand for a commodity. Some of these factors are discussed below :

1. Price of the Commodity.
2. Price of Related Goods:
  - (i) Complementary Goods
  - (ii) Substitute Goods

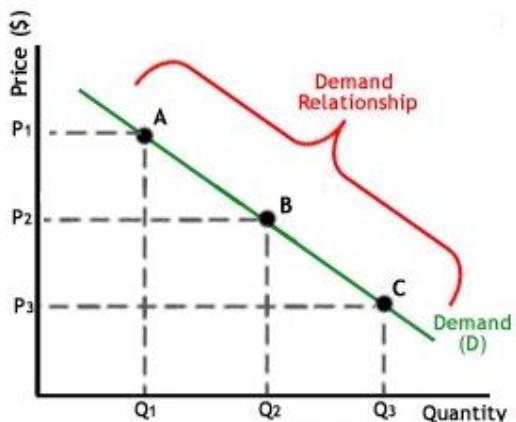
(3) Level of Income and Wealth of the Consumer:

- (i) Necessaries
- (ii) Inferior goods

- (iii) Luxuries
- (1) Tastes and Preference
- (2) Government Policy
- (3) **Other Factors :**
- (i) Size and Composition of Population
- (ii) Distribution of Income and Wealth
- (iii) Economic Fluctuations

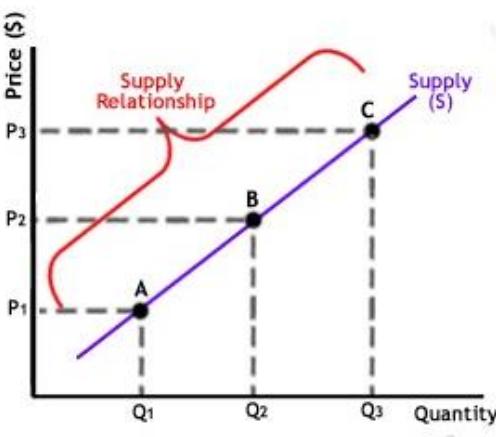
**Law of Demand:** The law of demand states that, other things being equal, the demand for good increases with a decrease in price and decreases in demand with a increase in price. The term other things being equal implies the prices of related goods, income of the consumers, their tastes and preferences etc. remain constant.

The law of demand states that, if all other factors remain equal, the higher the price of a good, the fewer people will demand that good. In other words, the higher the price, the lower the quantity demanded. The amount of a good that buyers purchase at a higher price is less because as the price of a good goes up, so does the opportunity cost of buying that good. As a result, people will naturally avoid buying a product that will force them to forgo the consumption of something else they value more. The chart below shows that the curve is a downward slope.

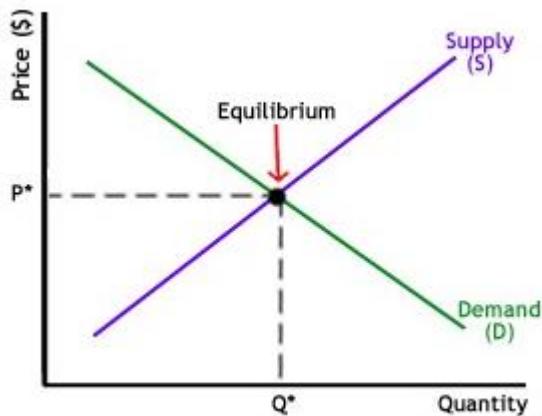


### The Law of Supply

Like the law of demand, the law of supply demonstrates the quantities that will be sold at a certain price. But unlike the law of demand, the supply relationship shows an upward slope. This means that the higher the price, the higher the quantity supplied. Producers supply more at a higher price because selling a higher quantity at a higher price increases revenue.



When supply and demand are equal (i.e. when the supply function and demand function intersect) the economy is said to be at equilibrium. At this point, the allocation of goods is at its most efficient because the amount of goods being supplied is exactly the same as the amount of goods being demanded. Thus, everyone (individuals, firms, or countries) is satisfied with the current economic condition. At the given price, suppliers are selling all the goods that they have produced and consumers are getting all the goods that they are demanding.



#### POINTS TO REMEMBER

- + Demand is the willingness to purchase plus ability to pay for it at a particular price and at a particular point of time.
- + Demand backed by adequate purchasing power.
- + Demand is multivariate relationships i.e. it is determined by many factors simultaneously.
- + There is an inverse relationship between the price of the goods and the quantity demand of that goods.
- + Partial Equilibrium Analysis- given by Alfred Marshall.
- + Ceteris paribus it means other things being equal or constant.

#### Factors affecting demand-

- + **Price of the product:** It is the most important factor affecting demand for the given commodity. Generally, there exists an inverse relationship between price and quantity demanded. It means, as price increases, quantity demanded falls due to decrease in the satisfaction level of consumers.
- + **Income:** Demand for a commodity is also affected by income of the consumer. However, the effect of change in income on demand depends on the nature of the commodity under consideration.
  - i. If the given commodity is a normal good, then an increase in income leads to rise in its demand, while a decrease in income reduces the demand.
  - ii. If the given commodity is an inferior good, then an increase in income reduces the demand, while a decrease in income leads to rise in demand.
- + **Relative price of product:** Demand for the given commodity is also affected by change in prices of the related goods. Related goods are of two types:
  - ❖ **Substitute Goods:** Substitute goods are those goods which can be used in place of one another for satisfaction of a particular want, like tea and coffee. An increase in the price of substitute leads to an increase in the demand for given commodity and vice-versa.
  - ❖ **Complementary Goods:** Complementary goods are those goods which are used together to satisfy a particular want, like tea and sugar. An increase in the price of complementary good leads to a decrease in the demand for given commodity and vice-versa.
- + **Consumer expectations:** If the price of a certain commodity is expected to increase in near future, then people will buy more of that commodity than what they normally buy. There exists a direct relationship between expectation of change in the prices in future and change in demand in the current period.
- + Advertisement effect.
- + Fashions, climate, customs etc.

**Demand schedule-** A Demand schedule is a list of the different quantities of a commodity which consumes purchase at different period of time. It expresses the relation between different quantities of the commodity demanded at different prices.

(i) **Individual Demand Schedule** : It is defined as the different quantities of a given commodity which a consumer will buy at all possible prices:-

PRICE (Rs.)	QUANTITY DEMANDED
1	5
2	4
3	3

(ii) **Market Demand Schedule:** Market demand schedule is defined as the quantities of a given commodity which all consumer will buy at all possible prices at a given moment of time:-

PRICE (Rs.)	A's DEMAND (1)	B's DEMAND (2)	MARKET DEMAND (1+2)
1	4	5	4+5=9
2	3	4	3+4=7
3	2	3	2+3=5

**Demand curve-** Demand Curve is simply a graphic representation of demand schedule. It expresses the relationship between different quantities demanded at different possible prices of the given commodity.

> **Characteristics of demand curve are as follows-**

- ❖ Downward sloping.
- ❖ From left to right.
- ❖ Negative slope.
- ❖ Inverse relationship between price and quantity demand.

**Why do Demand Curve slopes downwards?**

**Reasons are:-**

(i) **Law of Diminishing Marginal Utility :** The law of demand is based on the law of diminishing marginal utility which states that as the consumer purchases more and more units of a commodity, the satisfaction derived by him from each successive unit goes on decreasing. Hence at a lesser price, he would purchase more. Being a rational human beings the consumer always tries to maximize his satisfaction and does so equalizing the marginal utility of a commodity with its price i.e.  $Mux = px$ . It means that now the consumer will buy additional units only when the price falls.

(ii) **New Consumers :** When the price of a commodity falls many consumers who could not begin to purchase the commodity e.g. suppose when price of a certain good „x“ was Rs. 50 market demand was 60 units now when the price falls to Rs. 40, new consumers enter the market and the overall market demand rises to 80 units.

(iii) **Several Use of Commodity :** There are many commodities which can be put to several uses e.g. coal, electricity etc. When the prices of such commodities go up, they will be used for important purpose only and their demand will be limited. On the other hand, when their price fall they are used for varied purpose and as a result their demand extends. Such inverse relation between demand and price makes the demand curve slope downwards.

(iv) **Income Effect :** When price of a commodity changes, the real income of a consumer also undergoes a changes. Hence real income means the consumer's purchasing power. As the price of a commodity falls the real income of a consumer goes up and he purchases more units of a commodity eg. Suppose a consumer buys units wheat at a price Rs. 40/kg now, when the price falls to Rs. 30/kg. his purchasing power or the real income increase which induces him to buy more units of wheat.

(v) **Substitution Effect** : As the price of a commodity falls the consumer wants to substitute this good for those good which now have become relatively expensive e.g. among the two substitute goods tea and coffee, price of tea falls then consumer substitutes tea for coffee. This is caused the „Substitution effect“ which makes the demand curve sloped downwards. In a nutshell, with a fall in price more units are demanded partly due to income effect and partly due to substitution effect. Both of these are jointly known as the „price effect“. Due to this negative price effect the demand curve slopes downwards.

**Exceptions to the law of demand-** Exceptions to the law of demand refers to such cases where the law of demand does not operate, i.e., a positive relationship is established between price and quantity demanded.

1) **Giffen goods-** It is given by Robert Giffen. It is such a inferior goods in which consumer reduces its consumption when price decreases and increases the consumption when its price increases.

It has a very high negative income effect. Demand curve is upward sloping

2) **Goods of status-** the goods of status are name after Thorstein Veblen as Veblen goods. It is a prestigious goods like diamonds.

3) Expectation if price rise in future

4) Demonstration effect

5) Emergency

6) Uncertain product quality of goods

7) Snob appeal or ostentations.

#### POINTS TO REMEMBER

- + Goods whose demand rises when income rises are called **Normal Goods**.
- + Goods whose demand falls when income rises are called **Inferior Goods**.
- + **Substitute goods** – It is those goods which are an alternative to one another in consumption example tea and coffee. When price of tea rises, demand of coffee rises. There is a positive relations between price & quantity demand. Increase in the price of the substitute goods, the demand curve shifts rightward.
- + **Complementary goods**- those goods which are jointly used or consumed together to satisfy want. It is also known as jointly demanded goods. Example is car and petrol. If the price of one goods rises then the quantity demand of other goods reduces. There is a negative relationship between price & quantity demand. If there is decrease in the price of complementary goods the demand curve shifts leftward.
- + **Change in quantity demand**- when a movement along a demand curve is caused by change in price of the goods other things remain constant it is known as change in quantity demand. Movement along a same demand curve brings about expansion and contraction of demand curve. Expansion occurs when the price of goods is less and the quantity demand is more. Contraction occurs due to increase in price the quantity demand of the goods decreases.
- + **Change in demand**- A shift in the demand curve is caused by the change in other factors than price of the goods. Others factors such as income, price of other goods like substitute & complementary or consumer taste. There is increase and decrease in the demand curve. When income rises consumers buy more product in the same price so demand curve move rightward or outward. When the income decline consumers buy less products at the same price so demand curve moves left ward or inward.
- + The absolute value of the coefficient of elasticity of demand ranges from zero to infinity.
- + **Law of demand**- originator of law of demand is Alfred Marshall. It states that other things being constant, the higher the price of a commodity the smaller is the quantity demand for a commodity and lower the price of a commodity, higher will be the quantity demand of a commodity.

#### Elasticity of demand-

The elasticity of demand measures the responsiveness of the quantity demanded of a good to change in its quantitative determinant. In other words, the degree of responsiveness of change in quantity demanded due to a change in price or change in its determinants is called elasticity of demand.

> **There are three types of elasticity of demand-**

- 1) Price elasticity.
- 2) Income elasticity.
- 3) Cross elasticity.

**Price elasticity of demand** - it is the proportionate change in the quantity demand due to the change in the price.

Thus, price elasticity is responsiveness of change in demand due to a change in price only. Other factors such as income, population, tastes, habits, fashions, prices of substitute and complementary goods are assumed to be constant. Therefore, price elasticity of demand is written as:

$DQ = \text{Change in quantity demanded}$ . It is measured as the difference between new quantity demanded (Say Q1) and old quantity demanded (Q)

$$\text{Thus } DQ = Q_1 - Q$$

$DP = \text{Change in price}$ . It is measured as the difference between new price (P1) and old price (P)

$$\text{Thus } DP = P_1 - P$$

Price elasticity of demand may have five values infinite, zero, unit, greater than one and less than one.

In price elasticity minus sign is ignored.

**Methods of measuring elasticity are as follows-**

- 1) Percentage & proportionate method- In this method  $EP = \% \text{ change in quantity demand} / \% \text{ change in price}$ .
- 2) Point elasticity or geometric method- point elasticity of demand is the elasticity at a finite point on a demand curve. Point elasticity= lower segment/upper segment.
- 3) Total outlay or total expenditure method- total expenditure= price \* quantity.
- 4) Arc method- It is the average method.  $EP = \frac{\Delta Q}{\Delta P} * \frac{P_0+P_1}{Q_0+Q_1}$ . It did not ignore minus sign.

**Types of elastic demand-**

- 1) **Perfect elastic demand**- In this consumer have infinite demand at a particular price and none at all at even slightly higher than the given price.  $EP = \infty$ . Shape of perfect elastic demand is horizontal and it is parallel to x-axis.
- 2) **Relative elastic demand**- In this quantity demand is changes by a larger percentage than a price.  $EP > 1$ , it is also known as flatter. Mainly in prestigious and expensive goods.
- 3) **Unitary elastic demand**- In this quantity demand is changes by exactly the same % as the price change. It is also known as rectangular hyperbola with 45 degree of angle.
- 4) **Relative inelastic demand**- In this quantity demand is changes by a smaller percentage than a price.  $EP < 1$ . It is also known as Steeper.
- 5) **Perfect inelastic demand**- demands remain unchanged whatever be the price.  $EP = 0$ , it is vertical in shape and parallel to y-axis.

> **On the basis of factors whether the things are elastic or inelastic-**

- Luxury- elastic  $ep > 1$
- Necessities- inelastic
- Close substitute- elastic
- No substitute- inelastic
- High income- inelastic
- High cost- elastic
- More uses- elastic
- Few uses- inelastic
- More time period required to find substitute- inelastic
- Durable- elastic
- Perishable- inelastic
- Habits- inelastic

**Income elastic demand-** Income elasticity of demand may be defined as the degree of responsiveness of quantity demanded to change in income only. Other factors including price remain unchanged.

Income elasticity of demand is positive, when demand increases with increasing income. Income elasticity of demand is negative when, quantity demanded decreases with increase in income. In case of normal goods income elasticity of demand is of inferior goods, income, elasticity of demand is negative. Income elasticity of demand can be zero, one, greater than one, and less than one.

In short, % change in quantity demand/ % change in income. Income elasticity is graphically shown by **Engel curve** named after **Ernst Engel**. It establishes a systematic relationship between household income and expenditure on commodities. It shows optimum quantity of a commodity purchased at different levels of income, in order to equilibrium.

**Cross elastic demand-** Cross elasticity of demand is found in case of substitute goods as well as complimentary goods and non-related goods. In the case of substitute goods change in the price of one good, affects the demand for another good. For example, if the price of tea rises, the demand for coffee will rise. So, cross elasticity of demand refers to change in quantity demanded of one commodity, due to change in the price of another commodity.

In short, % change in quantity demand of x / % change in price of y. The value of cross elasticity ranges from minus infinity to plus infinity.

#### What are the factors affecting Elasticity of Demand?

**Ans.: (i) Nature of Commodity:** Ordinarily, necessities like salt, Kerosene, oil, match boxes, textbooks, seasonal vegetables, etc. have less than unitary elastic demand. Luxuries like air conditioner, costly furniture, fashionable garments etc. have greater than unitary elastic demand. The reason being that change in their price has a great effect on their demand. Comforts like milk, transistor radio, fans etc. have neither very elastic nor very inelastic demand. Jointly Demanded Goods like car & petrol, pen & ink, camera & films etc. have ordinarily in elastic demand for example rise in price of petrol will not reduce its demand if the demand for cars has not decreased.

**(ii) Availability of Substitutes:** Demand for those goods which have substitutes are relatively more elastic. The reason being that when the price of commodity falls in relation to its substitute, the consumer will go in for it and so its demand will increase. Commodities have no substitutes like cigarettes, liquor etc. have inelastic demand.

**(iii) Different Uses of Commodity:** Commodities that can be put to a variety of uses have elastic demand, for instance, electricity has multiple uses. It is used for lighting, room-heating, air conditioning, cooking etc. If the tariffs of electricity increase, its use will be restricted to important purpose like lighting. It will be withdrawn from important uses. On the other hand, if a commodity such as paper has only a few uses, its demand is likely to be inelastic.

**(iv) Postponement of the Use:** Demand will be elastic for those commodities whose consumption can be postponed for instance demand for constructing a house can be postponed. As a result demand for bricks, cement, sand etc. will be elastic. Conversely goods whose demand cannot be postponed, their demand will be inelastic.

(v) **Income of Consumer:** People whose incomes are very high or very low, their demand will ordinarily be inelastic. Because rise or fall in price will have little effect on their demand. Conversely middle income groups will have elastic demand.

(vi) **Habit of Consumer:** Goods to which a person becomes accustomed or habitual will have in elastic demand like cigarette, coffee tobacco. Etc. It is so because a person cannot do without them.

(vii) **Proportion of Income Spent on a Commodity:** Goods on which a consumer spends a very small proportion of his income, e.g. toothpaste, needles etc. will have an inelastic demand. On the other hand goods on which the consumer spends a large proportion of his income e.g. cloth etc. their demand will be elastic.

(viii) **Price Level:** Elasticity of demand also depends upon the level of price of the concerned commodity. Elasticity of demand will be high at higher level of the price of the commodity and low at the lower level of the price.

(ix) **Time Period:** Demand is inelastic in short period but elastic in long period. It is so because in the long run, a consumer can change his habits more conveniently in the short period.

### Marshallian demand function

In microeconomics, a consumer's Marshallian demand function (named after Alfred Marshall) specifies what the consumer would buy in each price and income or wealth situation, assuming it perfectly solves the utility maximization problem. Marshallian demand is sometimes called Walrasian demand (named after Léon Walras) or uncompensated demand function instead, because the original Marshallian analysis refused wealth effects.

According to the utility maximization problem, there are  $L$  commodities with price vector  $p$  and choosable quantity vector  $x$ . The consumer has income  $I$ , and hence a set of affordable packages.

$$B(p, I) = \{x : \langle p, x \rangle \leq I\},$$

where  $\langle p, x \rangle$  is the inner product of the price and quantity vectors. The consumer has a utility function

$$u : \mathbf{R}_+^L \rightarrow \mathbf{R}.$$

The consumer's **Marshallian demand correspondence** is defined to be

$$x^*(p, I) = \operatorname{argmax}_{x \in B(p, I)} u(x).$$

### Hicksian demand function

In microeconomics, a consumer's Hicksian demand correspondence is the demand of a consumer over a bundle of goods that minimizes their expenditure while delivering a fixed level of utility. If the correspondence is actually a function, it is referred to as the Hicksian demand function, or compensated demand function. The function is named after John Hicks.

Mathematically,

$$\begin{aligned} h(p, \bar{u}) &= \arg \min_x \sum_i p_i x_i \\ \text{subject to } u(x) &\geq \bar{u}. \end{aligned}$$

where  $h(p, u)$  is the Hicksian demand function, or commodity bundle demanded, at price vector  $p$  and utility level  $u$ .

Here  $p$  is a vector of prices, and  $x$  is a vector of quantities demanded so that the sum of all  $p_i x_i$  is the total expense on goods  $x$ .

**What is the difference between Marshallian and Hicksian demand? What are the two different used for?**

An individual's demand curve shows the relationship between how much an item costs and how much of it they will demand. The higher the price, the less you will buy, which is why the demand curve slopes down.

This simple, observable relationship is the marshallian demand curve - if you want to predict how much people will buy at a given price, this is the curve you want.

For some purposes, though, it's important to recognise that two different things happen when the price of something changes.

The first is the substitution effect - if something gets more expensive you'll be less likely to buy it and more likely to buy something else. So if beer goes up in price I'll buy more wine and less beer.

The second is the income effect. If something I already buy gets more expensive then I have less money to spend on other things. So a price rise for something I already buy is the same as a reduction in my income. And when my income falls I will spend less money on some goods, possibly including the thing that just changed in price. So the income effect asks what would happen to my demand for a good when it increases in price, not because it now costs more than other goods, but because the price rise has effectively made me poorer. The effect of my being poorer on my demand for a good will usually be negative - I have less money to spend overall so I will probably buy a bit less of everything - but not necessarily. Some goods, which economists call "inferior goods" are the kinds of things we buy more of when we are poor than when we are rich - so dried ramen maybe. For these goods the income effect of a price rise makes us want more of them. So the marshallian demand curve shows us the combined effect of both of these things. If the price of ramen goes up I'll buy less, because I'll trade into potatoes, but I'll also buy more, because I still buy some ramen, and now that takes up more of my money and I can't afford to eat out as often. If the price of beer goes up I'll buy less beer, because wine is now a better deal, and I'll also buy less beer because the beer I still buy leaves me with less money to spend on beer.

**The slope of my marshallian demand curve captures the net effect of both of those things.**

The Hicksian demand curve is the demand curve which shows how much of a product we would buy at any given price taking out the income effect. So it's the answer to the question "how much of this would you buy if the price went from \$8 to \$10 and I gave you enough extra income to compensate for the price change?"

Economists use the Hicksian demand curve for what's called "welfare analysis" - to figure out how much better or worse off people are as a result of a price change. The effects of a price change depend on how many good alternatives are available, so they need to be measured just looking at the pure substitution effect, without having to look at the income effect at the same time. The Hicksian demand curve doesn't show anything we observe in the real world, but it is the right way to determine how good or bad price changes are for the people they effect.

#### Revealed preference theory

Revealed preference theory, in economics, a theory, introduced by the American economist **Paul Samuelson** in 1938, that holds that consumers' preferences can be revealed by what they purchase under different circumstances, particularly under different income and price circumstances. The theory entails that if a consumer purchases a specific bundle of goods, then that bundle is "revealed preferred," given constant income and prices, to any other bundle that the consumer could afford. By varying income or prices or both, an observer can infer a representative model of the consumer's preferences.

Much of the explanation for consumer behaviour, particularly consumer choice, is rooted in the concept of utility developed by the English philosopher and economist Jeremy Bentham. Utility represents want (or desire) satisfaction, which implies that it is subjective, individualized, and difficult to quantify. By the early 20th century, substantial problems with the use of the concept had been identified, and many proposed theoretical replacements struggled with the same critiques. As a result, Samuelson offered what became known as revealed preference theory in an attempt to build a theory of consumer behaviour that was not based on utility. He argued that his new approach was based on observable behaviour and that it relied on a minimal number of relatively uncontroversial assumptions.

As revealed preference theory developed, three primary axioms were identified: the weak, strong, and generalized axioms of revealed preference. The weak axiom indicates that, at given prices and incomes, if one good is

purchased rather than another, then the consumer will always make the same choice. Less abstractly, the weak axiom argues that if a consumer purchases one particular type of good, then the consumer will never purchase a different brand or good unless it provides more benefit—by being less expensive, having better quality, or providing increased convenience. Even more directly, the weak axiom indicates that consumers will purchase what they prefer and will make consistent choices.

The **strong axiom** essentially generalizes the weak axiom to cover multiple goods and rules out certain inconsistent chains of choices. In a two-dimensional world (a world with only two goods between which consumers choose), the weak and strong axioms can be shown to be equivalent.

While the **strong axiom** characterizes the implications of utility maximization (see expected utility), it does not address all the implications—namely, there may not be a unique maximum. The generalized axiom covers the case when, for a given price level and income, more than one consumption bundle satisfies the same level of benefit. Expressed in utility terms, the generalized axiom accounts for circumstances where there is no unique bundle that maximizes utility.

The two most-distinguishing characteristics of revealed preference theory are as follows: (1) it offers a theoretical framework for explaining consumer behaviour predicated on little more than the assumption that consumers are rational, that they will make choices which advance their own purposes most efficiently, and (2) it provides necessary and sufficient conditions, which can be empirically tested, for observed choices to be consistent with utility maximization.

#### **Hick's Logical Theory of Demand: Preference Hypothesis and Logic of Ordering**

In order to explain the behaviour of an ideal consumer Prof. Hicks assumes preference hypothesis as a principle which governs the behaviour of such a consumer.

**The assumption of behavior according to a scale of preferences is known as preference hypothesis.**

Hicks explains the meaning of preference hypothesis or behaviour according to the scale of preference as follows:

"The ideal consumer (who is not affected by anything else than current market conditions) chooses that alternative out of the various alternatives open to him, which he most prefers, or ranks most highly. In one set of market conditions he makes one choice, in others other choices; but the choices he makes always express the same ordering, and must, therefore, be consistent with one another. This is the hypothesis made about the behaviour of the ideal consumer."

The above statement of Hicks implies that the consumer in a given market situation chooses the most preferred combination and he will choose different combinations in different market situations but his choices in different market situations will be consistent with each other.

It is important to remember that Hicks' demand theory presented in 'Value and Capital' was also based upon the preference hypothesis but there he expressed the given scale of preferences at once in the form of a set of indifference curves. This direct introduction of geometrical device has, as already noted above, various disadvantages and has, therefore, been given up. In 'Revision of Demand Theory' Hicks begins from the logic of ordering itself rather than starting from the geometrical application of it.

According to him, "the demand theory which is based upon the preference hypothesis turns out to be nothing else but an economic application of the logical theory of ordering." Therefore, before deriving demand theory from preference hypothesis he explains the "logic of order". In this context he draws out difference between strong ordering and weak ordering. He then proceeds to base his demand theory on weak-ordering form of preference hypothesis.

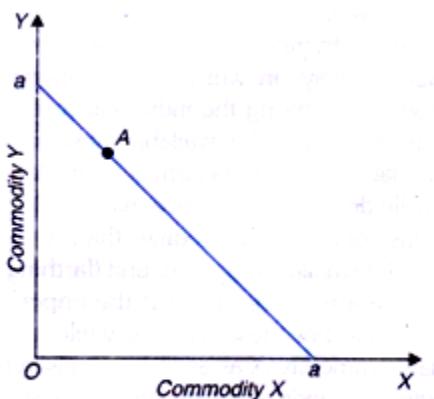
#### **Strong and Weak Orderings Distinguished:**

A set of items is strongly ordered, if each item has a place of its own in the order and each item could then be given a number and to each number there would be one item and only one item which would correspond. A set of items is weakly ordered if the items are clustered into groups but none of the items within a group can be put

ahead of the others. "A weak ordering consists of a division into groups, in which sequence of groups is strongly ordered, but in which there is no ordering within the groups."

It should be noted that indifference curves imply weak ordering in as much as all the points on a given indifference curve are equally desirable and hence occupy same place in the order. On the other hand, revealed preference approach implies strong ordering since it assumes that the choice of a combination reveals consumer's preference for it over all other alternative combinations open to him. Choice can reveal preference for a combination only if all the alternative combinations are strongly ordered.

Weak ordering implies that the consumer chooses a position and rejects others open to him, then the rejected positions need not be inferior to the position actually chosen but may have been indifferent to it. Hence, under weak ordering, actual choice fails to reveal definite preference. The strong ordering and weak-ordering as applied to the theory of demand are illustrated in Fig. 13.1.



**Fig. 13.1. Strong Ordering : Choice reveals preference.**

If the consumer is confronted with the price-income situation  $aa$ , then he can choose any combination that lies in or on triangle  $aOa$ . Suppose that our consumer chooses the combination  $A$ . Let us assume that our consumer is an ideal consumer who is acting according to his scale of preferences. Now, the question is how his act of choice of  $A$  from among the available alternatives within and on the triangle  $aOa$  is to be interpreted.

If the available alternatives are strongly ordered, then the choice of  $A$  by the consumer will show that he prefers  $A$  over all other available alternatives. In Samuelson's language he 'reveals his preference' for  $A$  over all other possible alternatives which are rejected. Since, under strong ordering, the consumer shows definite preference for the selected alternative, there is no question of any indifferent positions to the selected one.

#### Hicks' Criticism of the Logic of Strong Ordering:

Hicks criticises the logic of strong ordering. "If we interpret the preference hypothesis to mean strong ordering, we cannot assume that all the geometrical points, which lie within or on the triangle  $aOa$  represent effective alternatives. A two-dimensional continuum point cannot be strongly ordered."

Prof. Hicks further says that if commodities are assumed to be available only in discrete units, so that the diagram is to be conceived as being drawn on squared paper and the only effective alternatives are the points at the corners of squares and therefore the selected point must also lie at the corner of a square, then the strong ordering hypothesis is acceptable.

Since in the real world, commodities are available in discrete units, therefore the strong ordering hypothesis should not present any difficulty. But Hicks contends that the actual commodities may be available in integral number of units but this cannot be said of the composite commodity money, which is usually measured on the  $V$ -axis.

**Hicks regards money to be finally divisible. To quote him:**

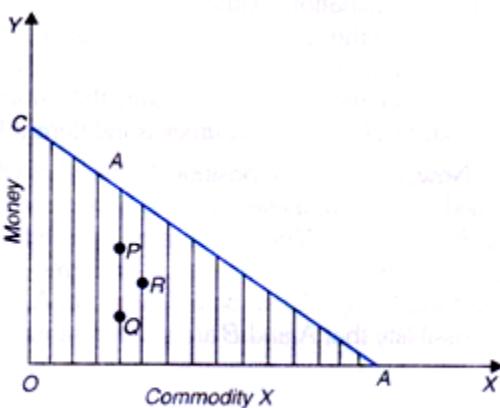
"If everyone of the actual commodities into which M can be exchanged is itself only available in discrete units; but if the number of such commodities is large, there will be a large number of ways in which a small increment of M can be consumed by rearrangement of consumption among the individual commodities, whence it will follow that the units in which M is to be taken to be available must be considered as exceedingly small."

And as soon as any individual commodity becomes available in units that are finally divisible, M must be regarded as finally divisible. In practice, we should usually think of M as being money, held back for the purchase of other commodities than X; though money is not finally divisible in a mathematical sense, the smallest monetary unit (farthing or cent) is so small in relation to the other units with which we are concerned that the imperfect divisibility of money is in practice a thing of no importance.

For these reasons, while it is a theoretical improvement to be able to regard the actual commodity X as available in discrete units it is no improvement at all to be obliged to impute same indivisibility to the composite commodity M. It is much better to regard money as finally divisible.

So, according to Hicks, where the choice is between any good which is available in discrete units and money which is finally divisible, the possibility of equally desired combinations must be accepted and strong ordering has, therefore, to be given up. Why the strong ordering hypothesis is not valid when the choice is between money which is finally divisible and is represented on the Y-axis and the commodity X which is imperfectly divisible and is represented on the X-axis is illustrated in Fig. 13.2.

This is because when money measured on Y-axis is taken to be finally divisible, the effective alternatives will no longer be represented by square corners, they will appear in the diagram as a series of parallel lines (or stripes) as shown in Fig. 13.2. All points on the stripes will be effective alternatives but such alternatives cannot be strongly ordered "unless the whole of one stripe was preferred to the whole of the next stripe, and so on; which means that the consumer would always prefer an additional unit of X whatever he had to pay for it." But this is quite absurd.



**Fig. 13.2. Strong ordering cannot be maintained when one commodity is money**

Thus, the effective alternatives appearing on the stripes cannot be strongly ordered. Again, suppose there are two alternatives P and Q on a given stripe which are such that P is preferred to R on another stripe, while R is preferred to Q. Given that, we can always find a point between P and Q on a given stripe which is indifferent to R.

It is thus evident that when various alternatives appear as a series of stripes, there can be a relation of indifference between some of them. Thus strong ordering cannot be maintained when various alternative combinations consist of the composite commodity money which is finally divisible and actual commodity which is available only in discrete units. "As soon as we introduce the smallest degree of continuity (such as is introduced by the 'striped' hypothesis) strong ordering has to be given up."

#### The Logic of Weak Ordering:

After rejecting the strong ordering hypothesis, Hicks proceeds to establish the case for the adoption of the weak ordering hypothesis. As noted above, the weak ordering hypothesis recognizes the relation of indifference, while the strong ordering hypothesis does not. In the words of Hicks, "If the consumer's scale of preferences is weakly ordered, then his choice of a particular position A does not show (or reveal) that A is preferred to any rejected position within or on the triangle: all that is shown is that there is no rejected position which is preferred to A. It is perfectly possible that some rejected position may be indifferent to A; the choice of A instead of that rejected position is then a matter of 'chance'.

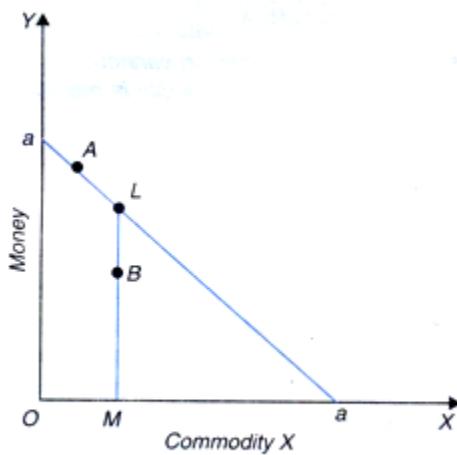
From the above statement of Hicks it is clear that, under the weak ordering hypothesis, the choice of a particular combination does not indicate preference for that particular combination over another possible alternative combination but it only shows that all other possible alternative combinations within or on the choice triangle cannot be preferred to the chosen combination.

There is possibility of some rejected combinations being indifferent to the selected one. If preference hypothesis in its weak ordering form is adopted, then it yields so little information about the consumer's behavior that the basic propositions of demand theory- cannot be derived from it.

Therefore, Hicks has felt it necessary to introduce an additional hypothesis along with the adoption of the weak ordering hypothesis so as to derive basic propositions of demand theory. This additional hypothesis which is introduced is simply that 'the consumer will always prefer a larger amount of money to a smaller amount of money, provided that the amount of good X at his disposal is unchanged.'

It should be carefully noted that it is not necessary to make this additional hypothesis if strong ordering form of preference hypothesis is adopted. But this additional hypothesis which has been introduced by Hicks is very reasonable and is always implicit in economic analysis, even though it is not explicitly stated every time.

Now the question is what positive information is provided by weak ordering approach when supported by the above additional hypothesis. Let us consider Fig. 13.3. From all the available combinations within and on the triangle  $aOa$  the consumer chooses A. Under weak ordering hypothesis alone the choice of A rather than B which lies within the triangle  $aOa$  does not show that A is preferred to B; it only shows that B is not preferred to A. In other words, under weak ordering alone, the choice of A rather than B means that either A is preferred to B, or the consumer is indifferent between A and B.



**Fig. 13.3. Weak-ordering Approach along with an additional hypothesis about money**

Now, consider the position L which lies where the stripe through B meets the line aa. On the additional hypothesis made, L is preferred to B, since L contains more amount of money than B, amount of X being the same in both the positions. If A and B are indifferent, then from the transitivity it follows that L is preferred to A. But L was available when A was selected. Therefore, though L can be indifferent to A, it cannot be preferred to A.

Thus, it follows that the possibility that A and B are indifferent must be ruled out. Hence, when we adopt the weak ordering along with the additional hypothesis we come to the conclusion that the chosen combination A is preferred to any combination such as B which lies within the triangle. What cannot be said with certainty under weak ordering even with the additional hypothesis is whether the chosen combination A is preferred to a combination such as L which lies on the triangle, that is, on the line aa. A can be either preferred to L or indifferent to it.

Drawing the difference between the implications of strong and weak orderings. Hicks says. "The difference between the consequences of strong and weak ordering so interpreted amounts to no more than this: that under strong ordering the chosen position is shown to be preferred to all other positions within and on the triangle, while under weak ordering it is preferred to all positions within the triangle, but may be indifferent to other positions on the same boundary as itself."

It will be evident from above that the difference between the effects of the strong and weak orderings is very small and that it only affects a class of limiting cases (i.e., positions lying on the triangle). The weak ordering theory, Hicks says, "has a larger tolerance and, therefore, it deals with these limiting cases rather better". Apart from this, weak ordering hypothesis, contends Hicks, is more useful and desirable.

"If we take the strong ordering approach, we are committing ourselves to discontinuity not merely to the indivisibility of the particular commodity, demand for which is being studied, but also to the indivisibility of the composite commodity used as a background. If, on the other hand, we take the weak ordering approach, we are committing ourselves to some degree of continuity but divisibility of the background commodity is itself quite sufficient to ensure that the weak ordering approach is practicable."

As stated above, the weak ordering approach to be useful for demand theory requires an additional assumption to be made, namely, that the consumer prefers a larger amount of money to a smaller amount. Further, another assumption which is to be necessarily made when the weak ordering approach is adopted is that the preference order is transitive. These two additional assumptions are not required in the case of strong ordering approach.

### Theory of Production and the Production Function

*Let us make an in-depth study of the theory of production and the production function in economics.*

*"Knowledge is the only instrument of production that is not subject to diminishing returns – J. M. Clark, 1957."*

#### Subject Matter:

A firm's objective is profit maximisation. If, in the short run, its total output remains fixed (due to capacity constraints) and if it is a price-taker (i.e., cannot fix the price or change price on its own as in a purely competitive market) its total revenue will also remain fixed. Therefore, the only way to maximise profit is to minimise cost. Thus profit maximisation and cost minimisation are the two sides of the same coin.

Moreover, supply depends on cost of production. The decision to supply an extra unit depends on the marginal cost of producing that unit. Perhaps the most important determinant of the firm's price- output decision in any market is its cost of production.

#### The firm's cost, in its turn, depends on two main factors:

(1) the technical relation between inputs and output (i.e., how outputs vary as inputs vary), and

(2) factors price's (i.e., the price of labour or the wage, the price of capital or the interest rate, etc.). In this article we will discuss a new concept, called production function. In this context we will clear a distinction between the short-run and the long- run as also between the return to a factor and the return to scale.

The business firm is a technical unit in which inputs are converted into output for sale to consumers, other business firms and various government departments. In the theory of production we are concerned with the nature of the conversion process, i.e., how inputs are converted into output. The key concept in the theory of production is the production function.

### The Production Function:

The production function shows the relation between input changes and output changes. It also shows the maximum amount of output that can be obtained by the firm from a fixed quantity of resources.

### The production function is expressed as:

$$Q = f(K, L, \text{etc.})$$

Where Q is output (which is the dependent variable) and K and L are capital and labour inputs, respectively. We can think of other inputs as well, such as land. For the sake of convenience we assume here that the firm employs only two factors of production— labour and capital. The firm's output is treated as a flow, i.e., so many units per period of time. The volume of output of the firm's product, per period of time, depends on the quantities of these factors that are used by the firm.

Let us now suppose that the firm wishes to increase its volume (rate) of output. This can be achieved by increasing the inputs of one or both factors of production. However, it is very easy to vary the quantity of labour in the production process. It can be done very quickly (in a week or a month). On the other hand, a fairly long period of time is required to vary the quantity of other factors, for example, change the quantity (or usage) of capital, e.g. to install a new machine.

The speed with which different kinds of factors can be varied largely depends on the time period under consideration. Here we assume that the firm is making decisions within two time periods — the short-run and the long-run.

### The Short-Run and the Long-Run:

The distinction between the short-run and the long-run is based on the difference between fixed and variable factors. A factor of production is treated as a fixed factor if it cannot easily be varied over the time period under consideration. On the other hand, a variable factor is one which can be varied over the time period under consideration.

#### The Short-Run:

The short-run refers to the period of time over which one (or more) factor(s) of production is (are) fixed.

In the real world, land and capital (such as plant and equipment) are usually treated as fixed factors. Here we are considering a simple production process with only two factors. We treat capital as the fixed factor and labour as the variable factor.

Thus, output becomes a function of (i.e., output depends on the usage of) the variable factor labour working on a fixed quantity of capital. In other words, if the firm wishes to vary its production in the short-run, it can do so only by changing the quantity of labour. With a fixed quantity of capital, this necessitates changing the proportions in which labour and capital are combined in the production process.

#### The Long-Run:

On the other hand the long- run is defined as the period over which all factors of production can be varied, within the confines of existing technology. In the long-run all factors are variable. Moreover the long-run also permits factor substitution. More capital and less labour or more labour and less capital can be used to produce a fixed amount of output.

#### In the language of R. G. Lipsey and C. Harbury:

"The long-run is the period that is relevant when a firm is either planning to go into business or to expand, or contract, its entire scale of operation. The firm can then choose those quantities of all factors of production that seem most suitable. In particular, it can opt for a new factory of any technologically feasible size. However, once the planning decision has been carried out— the plant built, machines purchased and installed, and so on—the firm acquires fixed factors and it is operating in the short run."

### The Boundary Between the Two:

The boundary between the short-run and the long-run is not defined by reference to any calendar—a year, or a month or a quarter. It varies from industry to industry and from time to time within the same industry. In most plantation industries the long-run is 15-20 years. For example, rubber trees require a very long time to grow. On the other hand, in a barber's shop it may be just a week.

A barber may require only a few days to make all types of changes in his small shop. In fact, the boundary between the two runs is defined only in terms of the fixity of one factor of production. The length of the short-run is influenced by two sets of considerations technological (such as how quickly equipment can be manufactured or installed) and economic (such as the price the firm is willing to pay for equipment).

We may now turn to a consideration of how output varies in response to input changes in the short run as also in the long run. It may be noted, at the outset, that short-run output changes reflect changes in the proportions in which factors are combined.

On the other hand, long-run changes in output reflect changes in the entire scale of operation. In other words, in short-run we study the returns to a variable factor (such as labour) and in the long-run we study the return to scale. It is, of course, possible to study the nature of return to a variable factor in the long-run, as we shall see later in this article.

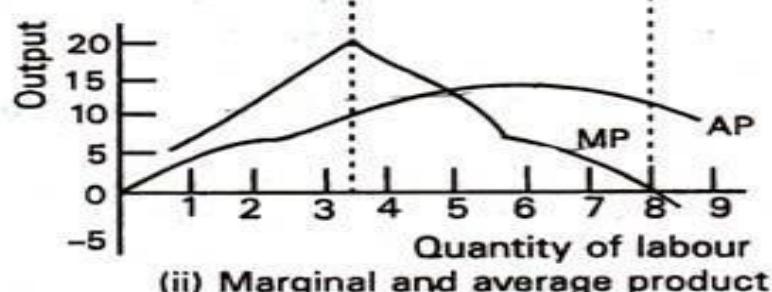
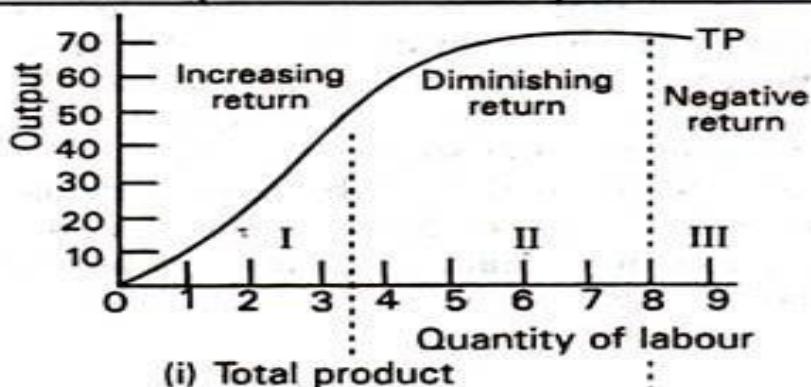
### Returns to a Variable Factor in the Short-Run:

In the short-run we study the behaviour of output as more and more units of a variable factor (labour) are applied to a given quantity of a fixed factor. So output becomes a function of labour input alone. If this is so the short-run production function may be expressed as:  $Q = f(L)$ , where the symbols have their usual meanings.

Table 6.1 illustrates the relationship between input changes and output changes in the short run. Three concepts bear relevance in this context, viz., total product (TP), average product (AP) and marginal product (MP). Here Q is total product. It refers to the total amount produced by all the factors employed in a fixed time period. AP is output per unit of input. It is calculated by dividing TP by the amount of the variable factor, e.g., labour (L).

**Table 6.1 : The relation among output and the quantity of a variable factor (labour) used in combination with a fixed factor (capital)**

Quantities of labour capital		Output			Stages of production
(i)	(ii)	(iii)	(iv)	(v)	(vi)
1	10	0	4	4	Increasing return to the variable factor (labour)
2	10	4	5	6	
3	10	10	7	11	
4	10	21	10	19	
5	10	40	15		Diminishing return to the variable factor
6	10	55	11		
7	10	60	5		
8	10	63	3		
9	10	64	1		
9	10	63	-1		Negative return to the variable factor



**Fig. 6.1. Total product, marginal product and average product of a variable factor, used with a fixed factor in the short run**

So  $AP = TP/L = Q/L$ . is output per unit of labour or per worker. The marginal product is defined as the change in total product associated with a small change in the usage of the variable factor. It may be expressed as

$MP = \Delta Q/\Delta L$  where 'A' denotes any change.

Thus, MP is the ratio of the change in Q and change in L.

The data presented in Table 6.1 are shown graphically in Fig. 6.1. In Table 6.1 we show the total product that results from employing 1 to 9 units of labour [Column (i)] in combination with a fixed quantity (10 units), of capital, [column (ii)]. Column (iv) shows the corresponding AP figures. Each figure of column (iv) is arrived at by dividing each element of Column (iii) by the corresponding element of Column (i). Column (v) gives the MP figures.

Each element in this column shows the contribution (addition) made to the total product (TP) by the one additional unit of labour. In other words, MP is the change in total product which results from a change in the usage of the variable factor (i.e., labour) by one unit. For example, when one unit of labour is employed, TP is 4. When two units are employed, TP is 10. Therefore, the anticipation of the said unit of labour is  $10 - 4 = 6$  units. This is the MP of labour.

#### **The Law of Variable Proportions:**

If we look at Table 6.1 carefully we can identify three stages of the production process in the short-run:

(1) In the first stage, when additional units of labour are employed, TP increases more than proportionately and MP also increases. This is the stage of increasing return to the variable factor (labour).

(2) In the second stage TP increases no doubt, but not proportionately. In other words, the rate of increase of TP falls. This means that MP diminishes. This is the stage of diminishing return to the variable factor (labour). This is perhaps the most important stage of the production process in the short run.

(3) In the third stage, TP itself diminishes and the MP is negative. This is the stage of negative return to the variable factor (labour).

The three stages together constitute the Law of Variable Proportions. Since the second stage is most important from the practical point of view, we often ignore the other two stages in most discussions. This is why the Law of Variable Proportions is also known as the Law of Diminishing Returns, which is universally applicable.

The Law states that "when increasing quantities of a variable factor are used in combination with a fixed factor, the marginal and average product of the variable factor will eventually decrease." In our example AP increases until 5 men are employed. It declines thereafter. MP declines earlier. It rises until 4 men are employed and declines when 5 and more men are employed.

No doubt, the data presented in Table 6.1 are hypothetical. But the relationship shown among TP, MP and AP is widely applicable. From Table 6.1 we may also discover the relationship between MP and AP.

#### **Three points may be noted in this context:**

1. So long as MP exceeds AP, the AP must be rising.
2. Thus, it follows as a corollary of this that only when MP falls below the level of AP, does AP fall.
3. Since MP rises when MP is exceeding AP, while AP falls where MP is less than AP, it follows that where AP is at a maximum, it is equal to MP. This is why; the MP curve intersects the AP curve at the latter's maximum point. (The relation between the margin and the average is mathematical.)

In this context we may note that MP can be zero or negative, but AP can never be so. AP may be very small but is always positive as long as TP is positive. However, such a situation does not carry any significance. In an example where 9 men are employed, TP falls. So no profit-maximising producer would consider employing so many workers.

There are two interpretations of the law of diminishing returns. See Fig. 6.2 which is self-explanatory.

**Firstly**

successive equal increments of the variable factor	applied to the fixed factors	yield progressively smaller increments in total output
----------------------------------------------------	------------------------------	--------------------------------------------------------

**Secondly**

increasingly large increments of the variable factor	must be applied to the fixed factors in order to yield	constant increments in total output
------------------------------------------------------	--------------------------------------------------------	-------------------------------------

**Fig. 6.2. Two Interpretations of the Law of Diminishing Returns**

**The Basis of the 'Law':**

Why does the law hold? The answer to this question is that the application of varying quantities of one factor to a fixed quantity of another changes the proportions in which the two factors are combined. In practice, it is observed that some factor combinations are more efficient than others.

As the producer moves towards the best combination, MP and AP tend to rise. As, in subsequent stages of the production process, he moves beyond it, MP and AP both fall (because diminishing returns set in). The basic point is that the best combination of factors is the one which gives the optimum scope for division of labour and specialization.

In the short run it is not possible to install a new machine or increase the size of an agricultural farm. So, more men are usually employed in conjunction with a fixed amount of capital or land. Thus, if in the short run it is not possible to increase the usage of all factors, there will be a change in the factor proportion.

Suppose 10 workers can cultivate a plot of land in the best possible way. If more men are employed the opportunities for specialization will gradually diminish (because each may get into other's way) and diminishing returns set in.

The Law of Diminishing Returns is also known as the Law of Non-proportional Returns. The Law may be stated as : If, in the short run, it is not possible to change the usage of all factors or change them strictly in proportion, output will follow the Law of Non-proportion Returns (because every extra unit of variable factor will gradually make less and less contribution to the total product).

The proximate reason for diminishing returns is the presence of a fixed factor which is used with variable factors. Thus, the Law operates in agriculture due to fixity of land as a factor. If too many workers are employed on land, TP will fall. It is because there were too many workers that got into each other's way. So the law would not operate if the farmer brought more land under the plough, along-with more hired workers.

In this case, however, we would no longer be considering the application of varying quantities of one factor together with a fixed factor (land). Thus if both the factors — land and labour — were varied the law would not operate. Thus, in short, the law of diminishing returns refers only to the effect of varying factor proportions.

**Consequence of the 'Law':**

If the law did not operate, i.e., if MP were constant, it would simply be possible to increase food production of a country by employing more and more workers on a fixed plot of land. In that case there would be no food problem due to population growth.

It would be possible to feed the entire world by employing more and more workers on the fixed amount of land in the world! However, this does not happen in reality. Instead, a rise in the proportion of labour to land would be found, eventually, to lead to diminishing returns — a continuous decline in marginal product as more and more workers are employed on a fixed plot of land.

The land area of the earth is fixed. So the only way to avert the operation of the law of diminishing return is to introduce techno-logical progress in agriculture. An example of this is Green Revolution which has succeeded in most developing countries of Asia and Africa.

There is no denying the fact that in the absence of rapid technological progress in agriculture, population growth will ultimately lead to a steady decline in the living standards of the people in most parts of the world.

### **Where Does the Law Apply?**

The Law of Diminishing Returns is operative not only in agriculture but also in various other fields of production.

#### **(i) Buildings:**

In the case of buildings, it has been found that the costs of construction increase more in proportion to the height of a building after a certain level. Hence, it is not always profitable to build tall houses. This is an example of the operation of diminishing returns.

#### **(ii) Mines:**

The law is applicable to mines also. In a coal mine, as the mine goes deeper the cost of raising coal increases proportionately because costlier machinery and equipment have to be used.

#### **(iii) Fisheries:**

The law is operative in fisheries also. With the application of additional amounts of labour and capital, the additional catch of fish does not increase in proportion.

#### **(iv) Manufacturing:**

The law operates in manufacturing industries under certain circumstances. A factory with a definite quantity of machinery is capable of producing a certain quantity of goods. If we try to produce more than this amount by using more labour and raw materials, while keeping the machinery unchanged, the cost of production per unit will go up. This means that increase of labour and raw materials beyond a certain point yields proportionately less.

This is an example of diminishing returns. If the factory increases its machinery and other equipment, along with labour and raw materials, this situation will not arise and returns may increase more in proportion. Equipment and machinery can only be increased in the long run. Hence, we can say that the law of diminishing returns operates in industries in the short run, i.e., so long as the machinery and equipment are unchanged.

Prof. Alfred Marshall believed that the law of diminishing returns was particularly operative in those fields of production where the various gifts of nature play a predominant part, e.g., agriculture, mining, fisheries, etc. He also thought that in the case of industrial production, where human labour and capital are important, the laws of diminishing and increasing returns could be operative depending upon circumstances and under different conditions.

As he put it, while the part which nature plays in production shows a tendency to diminishing returns, the part which man plays shows a tendency to increasing returns. According to this view, the laws of diminishing returns and increasing returns are particular aspects of a more general principle regarding the employment of factors of production. This general principle is known as the Law of Variable Proportions.

### **Importance of the Law:**

The law of variable proportions carries economic significance. In fact, cost of production and productivity of factors are closely interrelated. More specifically, cost and productivity are the reciprocal of each other. If MP increases, a business firm's marginal cost of production will fall. Similarly, if AP increases, average variable cost will fall. The converse is also true.

This is why the Law of Diminishing Return is also known as the Law of Increasing Marginal Cost. In fact, a firm's short-run marginal and average cost curves are U-shaped due to the operation of the Law of Diminishing Returns.

**Returns to Scale:****Returns to Variable Factors in the Long Run:**

In the short run, the only way to change the volume of output is to alter the usage of the variable factor. A change in the quantities of the variable factor leads to a change in the factor proportions. The long run, however, refers to a period of time over which all the factors of production can be varied. When this is done, holding factor proportions constant, the production function is said to exhibit returns to scale. For instance, a profit-maximising firm might double the usage of both labour and capital.

When there is a change in the scale of operation of a business firm the law of diminishing returns does not operate. Since all factors are variable in the long run we may find that returns to scale increase decrease or remain constant.

The law of diminishing returns deals with short-run situations in which some factors of production are fixed in supply. However, in the long run, it is possible to vary the use of all factors of production employed. More land can be acquired, more machines installed and more buildings constructed.

This means that in the long run it is possible to change the scale of activities (operation) of a firm. The truth is that a change in the scale takes place when the quantities of all the factors are changed by the same proportion so that there is no change in the proportions in which they are combined.

It is to be noted that when the scale of production is changed, output changes are not proportionate. When a firm doubles its size, output may rise by more than 100%, exactly 100% or less than 100%. The relationship between changes in scale and changes in output are described as returns to scale.

It is widely believed that in a typical production activity, when scale of operations is first increased, increasing returns to scale are observed; ultimately, with the exhaustion of all economies, there is constant return to scale; if expansion is carried far enough, returns to scale decrease.

**Table 6.2 shows increases in total output as the scale of production increases:**

Units of labour (no. of workers)	Units of capital (no. of machines)	Total output	Increase in the size of the firm	Increase in total output
2	1	10	{ 100%	150%
4	2	25	{ 50%	68%
6	3	42	{ 33 $\frac{1}{3}$ %	33 $\frac{1}{3}$ %
8	4	56	{ 25%	20%
10	5	67.2	{ 20%	16%
12	6	78.0		

Table 6.2 shows that initially there is increasing return to scale, then constant return to scale and finally decreasing return to scale. A related point may also be noted in this context. There may be diminishing returns to a factor and increasing returns to scale at the same time.

Table 6.2 shows that the firm increases its size but the proportion between the factors remains unchanged (i.e., 1 unit of capital per 2 units of labour). As the size of the firm increases from 2 workers and 1 machine to 6 workers and 3 machines, it experiences increasing returns to scale (output increase more than proportionately).

A change in scale from 6 people and 3 machines to 8 people and 4 machines yields constant returns to scale (size and output change by the same percentage). Any further growth in the size of the firm yields decreasing returns to scale because output increases less than proportionately.

#### **Increasing Returns to Scale:**

A situation of increasing returns to scale can be attributed to two considerations indivisibilities of some factors and advantages of specialisation.

##### **1. Indivisibilities:**

The inability to divide certain factor units into smaller units without either complete loss of usefulness in production or partial loss in efficiency results in a relatively low output per unit of input when operations are conducted on a very small scale.

In other words, in some instances it is not possible to adjust all factors in the same proportion upward or downward. Certain types of capital goods, for example, will not perform their function if they are built on too small a scale, since weight is important in their operation. This is true of various types of capital equipment used in road construction.

Similar patterns are found in warehouse construction; doubling the building material will more than double the amount of usable space. With a rectangular building costs of walls will need to increase only 50 per cent for the capacity of the area to double.

Indivisibilities are not confined to capital goods. Labour also is not completely divisible. One operator may be required for each machine, regardless of its size. A freight train requires one engineer, regardless of the tonnage of the train; there is no way of using a fraction of an engineer on a train of light tonnage.

Within limits, in small enterprises, employees may be used to perform several different tasks. But as a practical matter, there are severe limitations to such possibilities. A switchboard operator may serve as receptionist and do some stenographic work, but she can scarcely be used at the same time as an elevator operator and window cleaner.

A clerk in a store may be busy only 2-3 hours a day. Yet he must be paid for the entire day. In any type of business, it is difficult to utilise each worker to the maximum of his productivity at all times. As an establishment grows, the percentage of labour time not utilised should fall, if management policies are effective.

Indivisibilities are also encountered in advertising, research work, and financing. Advertising on a small scale is relatively less effective than on a much larger scale. Industrial research activities cannot be carried on effectively on a small scale. Indivisibilities are also found in the financing of a business. The cost of floating a bond issue, for example, is to a large extent independent of the size of the issue.

Thus, this method of financing — the cheapest method when large amounts of capital are to be obtained — is expensive to a firm until it has expanded beyond a certain size. The refusal of many investors to consider the bonds of any except well-known companies increases the difficulty of bond financing by small firms.

##### **2. Specialisation:**

The other and closely related cause of increasing returns to scale is the advantage offered by specialisation. In a very small business, employees must perform a wide variety of tasks. As the size of enterprise increases, each employee can be used in a relatively specialised job, with a consequent increase in output per worker. The advantages of specialisation of labour have been recognised since the days of Adam Smith.

The primary advantages include the greater skill acquired with specialisation, the avoidance of wasted time in shifting from one task to another, and the employment of persons best suited to particular types of work. In managerial activity as well as in other phases of work, advantages of specialisation are encountered.

As a firm grows in size, personnel relations will be conducted by a specialist; traffic management will be in the hands of a full-time traffic expert instead of being performed by a person who also has various other tasks. Specialisation is also possible with capital equipment.

As a firm increases its scale of operations, it becomes possible to replace non-specialised equipment which is capable of performing a number of tasks by specialised equipment designed for various specific operations, with a consequent increase in output per unit of input.

The importance of the phase of increasing returns depends in large measure upon the type of production process involved, in almost any type, increasing returns are likely to be encountered to some extent when a business expands from a very small initial size because of indivisibilities of labour. If, however, a firm utilises very little capital equipment, and if few advantages of specialisation of labour are derived, increasing returns may very quickly come to an end.

On the other hand, if a firm uses extensive amounts of capital goods of types which cannot be used efficiently on a small scale, there may be very substantial increasing returns (extending over a large volume of output). Thus, increasing returns are very important in steel, cement, and automobile industries, while they are of much less importance in agriculture and retailing.

#### **Constant Returns to Scale:**

As a firm continues to expand its scale of operations, it gradually exhausts the economies responsible for increasing returns. A firm will eventually grow to the point at which it is using the best type of capital equipment available and is enjoying full advantages of specialisation of labour. Beyond this point, further increases in the scale of operations are likely to produce more or less constant returns for a substantial range of output. If the entire scale of operations is double, output will approximately also double.

However, constant returns to scale are relevant only for time periods in which adjustment of all factors is possible. If a firm doubles output in a short period with a fixed physical plant which was previously utilised to normal optimum capacity, returns per unit of the variable factors will decline because of the operation of the Law of Diminishing Returns. But if factors are varied, as may be possible over a long period of time, the law of diminishing returns will not operate.

#### **Decreasing Returns to Scale:**

As a firm continues to expand its scale of operations, beyond a certain point there is apparently a tendency for returns to scale to decrease, and thus a given percentage increase in the quantities of all factors will bring about a less than proportional increase in output. It is believed, however, on the basis of actual studies, that a long phase of constant returns is usually observed.

Decreasing returns to scale for the firm itself are usually attributed to increased problems and complexities of large-scale management. Continued increases in entrepreneurial activity beyond a certain point encounter more and more serious problems and difficulties. An increasing percentage of the total labour force will be required in administrative work, in order to provide coordination of the activities of the enterprise and necessary control over the large numbers of employees.

A growing concern, once it reaches substantial size, encounters a fundamental problem of management; final authority for basic policy must remain in the hands of a group of men who control the operation of the business. Yet these men are far removed from the actual level of operations. They are forced to make decisions on the basis of second-hand information, on subjects with which they have no direct contact. Furthermore, substantial delay can occur in the making of decisions as the size of the firm increases.

The causes of falling efficiency as the size of the firm increases are described as diseconomies of scale. One possible cause of such diseconomies seems to be the limited supply of entrepreneurs. As G.F. Stanlake has put it, "while the inputs of land, labour, and capital may be increased proportionately, this may not be possible with regard to management ability. The entrepreneurial skills required to manage large enterprises are, it seems, limited in supply so that it is often difficult to match the increase in the supply of other factors with a corresponding increase in the supply of management ability."

The growth of a business also increases the amount of division of responsibility and serves to lessen initiative, especially on the part of persons in lower-level jobs who are in a position to bring desirable changes. With increased size comes loss of personal contact between management and workers, with consequent loss of moral and increase in labour troubles.

#### Distinction between Return Factor and Return to Scale:

The law of diminishing marginal physical productivity applies only to the short-run. It describes the additional output that is produced when additional units of a variable input are combined with a particular quantity of a fixed input.

Economies and diseconomies of scale and increasing, constant, and decreasing cost industries are concepts that apply to the long run. Economies and diseconomies of scale refer to an individual firm. Increasing, decreasing, and constant costs refer to an entire industry.

Economies and diseconomies of scale describe what happens to a firm's costs as the firm increases production and no other firms influence it. The shape of the firm's long-run average cost curve is determined by the extent to which the firm experiences economies and diseconomies of scale.

The production function shows increasing returns to scale if an equal percentage increase in all inputs results in a more than proportionate increase in output. Suppose a firm uses only two variable factors, say, labour and capital. Assume that the firm doubles its use of both labour and capital.

If, as a result of this, output gets more than doubled, there are increasing returns to scale. If, when inputs are doubled, output is exactly doubled, return to scale are constant. If, finally, doubling of capital and labour causes a less than proportionate increase in output, then decreasing returns to scale are said to be operating.

These three cases are illustrated in Fig. 6.3. In all the three sections of the diagram we show the short run average and marginal product as variable amounts of labour are employed in two plants.

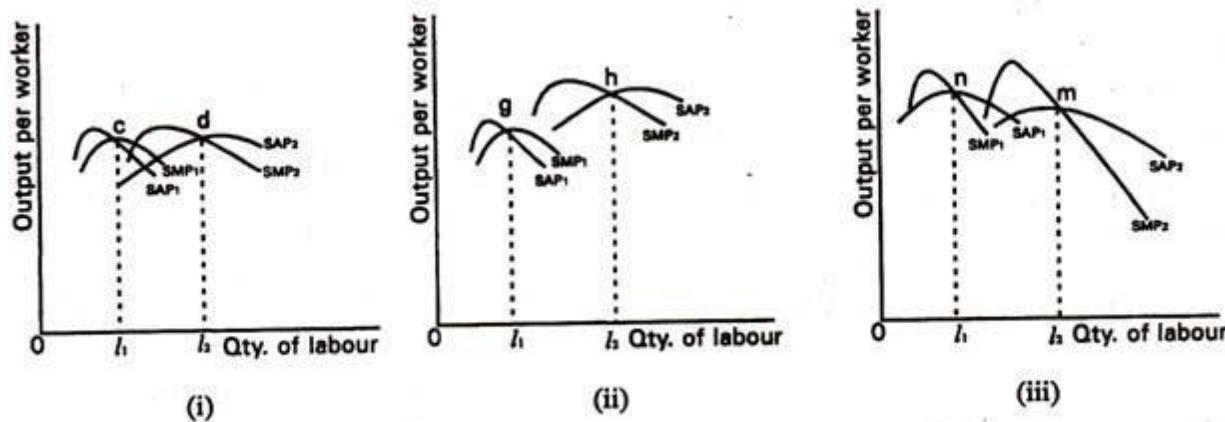


Fig. 6.3. Returns to Scale

In the **short run**, the firm of different sizes is restricted to one of the two plants or is supposed to have a fixed plant. This means that its production capacity is fixed. So output changes are associated only with changes in the usage of the variable factor, labour. This is why in the short run we study the return to a factor and in the long run we study the return to scale.

Since in the long run the firm can choose to operate either plant, long-run changes consist of moving from one set of short-run curves to another. This is done by altering the usage of capital. The short-run curves are labelled SAP1 and SMP1 for the smaller plant; and SAP2 and SMP2 for the larger plant, which is assumed to use exactly double the quantities of capital as the smaller plant.

#### Constant Return to Scale:

In Fig. 6.3(i) it is clear that the production process exhibits constant returns to scale. Suppose the firm is operating at point c or SAP1, at which average product is at a maximum, i.e., the quantity of labour is L1 and output per worker, on an average, is L1c.

The firm then builds a new plant of double the size of the original plant. Moreover, the quantity of labour employed is also doubled. As a result output also gets doubled, or, output per unit of factor input remains unchanged. Here in Fig. 6.3(i)  $L1c = L2d$ . Since output changes in exact proportion to inputs, returns to scale are said to be constant.

#### **Increasing Returns to Scale:**

Fig. 6.3(ii) shows that when inputs are doubled output is more than doubled. This means that average product of input increases. Suppose, as in the previous case, that the firm moves from the smaller plant to the larger plant, thereby doubling its amount of capital. It also uses double the quantity of labour  $OL2$  is exactly twice the quantity of labour  $OL1$ .

Now average product rises  $L2h$  is greater than  $L1g$ . If average product per unit of labour rises when labour and capital inputs are doubled, then total product is more than doubled. This means that the production function is showing increasing returns to scale.

#### **Decreasing Returns to Scale:**

In Fig. 6.2(iii) we illustrate a situation when there is decreasing returns to scale. In this case, we observe that doubling of the size of the plant and of labour inputs lowers average product from  $L2n$  to  $L2m$ . Consequently output is less than doubled.

#### **Diminishing Return to a Variable Factor and Increasing Returns to Scale:**

Fig. 6.3 shows that a firm's production process may show both diminishing return to a variable factor and increasing returns to scale. There is no contradiction or logical inconsistency between the two relationships. The following table clarifies the point:

Table 6.3: Varying outputs resulting from different quantities of labour and capital

		Units of Capital		
		1	2	3
Unit of Labour	1	100	120	135
	2	130	220	290
	3	150	300	335

Table 6.3 shows total output that is associated with different quantities of labour and capital that are being used in the production process. The table enables us to calculate the marginal product of either variable factor (labour and capital). It can also be used to identify the nature of returns to scale.

Suppose we want to calculate marginal product of capital. We have to keep labour constant (say, at one unit). When one unit of capital is used with one unit of labour, output is 100 units. If 2 units of capital are used, keeping the quantities of labour fixed at 1, output increases to 120. So the marginal product of capital is 20. If another unit of capital is used, output increases to 135, or marginal product of capital is 15. Thus, the marginal product of capital is diminishing.

Now let us keep capital constant and increase the usage of labour. If 2 workers are employed, holding capital fixed at 1 unit, total product increases from 100 to 130 and marginal product of labour is 30. In the next stage output increases to 150 when one extra worker is employed. So marginal product of labour is 20. Again the marginal product of labour is diminishing.

Now suppose both the inputs are doubled at the same time. As a result output increased from 100 to 220. This is a case of increasing returns to scale. If, now, 3 units of capital and labour are used (i.e., if there is 50% increase in the quantity of capital and labour) output increases from 220 to 335 (which shows more than 50% increase in output). Thus the production function again exhibits increasing returns to scale. In each case the factor proportion remains constant (1: 1 = 2: 2 = 3: 3).

Thus, from this exercise we learn an essential lesson exactly the same figures of the productivity of labour and capital can yield diminishing returns to each variable factor, but increasing returns to scale. The reason is not far to seek; the law of diminishing returns relates to varying of one input while holding the other constant, while the relations of returns to scale refer to the varying of both inputs.

#### **Distinction between Economies of Scale and Returns to Scale:**

The two concepts, viz., economies of scale and returns to scale create confusions. Economies of scale reduce average cost as the scale of production increases, while returns to scale are concerned with physical input and output relationships.

If, for example, the usage of factors were to increase by 150%, the production process under consideration would be said to be experiencing increasing returns to scale. Conversely, if inputs were to be increased by 100% but output were to increase by less than this, then the production function would exhibit decreasing return to scale.

Increasing returns to scale lead to decreasing cost. However, it is not essential that every economy of scale which reduces cost is a result of return to scale. A simple example may clarify the point. Bulk-purchase of raw material may be a source of internal economy for a firm but it does not involve returns to scale since there is no change in the input/output relationship.

#### **Determinants of Returns to Scale:**

**There are two major determinants of increasing returns to scale:**

- (1) Indivisibilities and
- (2) The principle of increased dimensions.

There are certain other determinants of constant and decreasing returns. We may now make a brief review of these determinants.

##### **1. Indivisibilities:**

A large firm can afford to employ large and specialized machinery. Moreover, the firm has large output to fully occupy the machine for a long period of time and, therefore, it can be operated efficiently. Indeed some machines are indivisible in the sense that they are only efficient if they are large in size, for example, blast furnaces. Small firms cannot afford to purchase these large, indivisible machines and do not produce an output large enough to keep that fully occupied over a long period.

##### **2. The Principle of Increased Dimensions:**

Large machines sometimes lead to fall in costs per unit of output. This is because a large machine can cater for a much larger output. But this may involve only a slightly greater cost. For example, a double-decker bus can carry twice number of passengers as a single decker at the same total fixed cost. Moreover, only the same labour is required. A large oil tanker can carry twice as much oil as a smaller tanker, but needs only a few more workers to operate it. This is called the economy of increased dimensions.

These two determinants of returns to scale are inter-related. The principle of increased dimensions illustrates the idea that indivisibilities lie behind the existence of increasing returns to scale. The volume of output has to be large enough so as to make the best possible use of specialised technique, often capital intensive, especially in the manufacturing industries where standard products are mass produced in the long run.

#### **Bases of Constant and Decreasing Returns:**

The most common explanation of the appearance of constant and decreasing returns to scale lies simply in the exhaustion of the bases for increasing returns. Sometimes the reason may be purely technological —larger machines may be more efficient up to a certain point but not always so. If such machines are intensively used, a stage is often reached in the long run when such machines lose their efficiency and effectiveness.

One of the common explanations of decreasing returns to scale, however, relates to management. With an increase in the scale of operations of a business firm there are problems of management coordination, so that business efficiency declines when top management loses track of all sections of a business.

### **Cost Theory: Introduction, Concepts, Theories and Elasticity | Economics**

#### **Introduction:**

The firm's costs determine its supply. Supply along with demand determines price. To understand the process of price determination and the forces behind supply, we must understand the nature of costs. We study some important concepts of costs, and traditional and modern theories of cost.

#### **Contents:**

1. Introduction
2. Cost concepts
3. The Cost Function
4. Cost-Output Relation
5. The Modern Theory of Costs
6. Economies of Scale and the LAC Curve
7. Elasticity of Cost
8. Elasticity of Productivity

#### **Cost concepts:**

Costs are very important in business decision-making. Cost of production provides the floor to pricing. It helps managers to take correct decisions, such as what price to quote, whether to place a particular order for inputs or not whether to abandon or add a product to the existing product line and so on.

Ordinarily, costs refer to the money expenses incurred by a firm in the production process. But in economics, cost is used in a broader sense. Here, costs include imputed value of the entrepreneur's own resources and services, as well as the salary of the owner-manager.

There are various concepts of cost that a firm considers relevant under various circumstances. To make a better business decision, it is essential to know the fundamental differences and uses of the main concepts of cost.

#### **Accounting and Economic Costs:**

Money costs are the total money expenses incurred by a firm in producing a commodity. They include wages and salaries of labour; cost of raw materials; expenditures on machines and equipment; depreciation and obsolescence charges on machines; buildings and other capital goods; rent on buildings; interest on capital borrowed; expenses on power, light, fuel, advertisement and transportation; insurance charges, and all types of taxes.

There are the accounting costs which an entrepreneur takes into consideration in making payments to the various factors of production. These money costs are also known as explicit costs that an accountant records in the firm's books. But there are other types of economic costs called implicit costs. Implicit costs are the imputed value of the entrepreneur's own resources and services.

The salary of the owner-manager who is content with having normal profits but does not receive any salary, estimated rent of the building if it belongs to the entrepreneur, and interest on capital invested by the entrepreneur himself at the market rate of interest. Thus economic costs include accounting costs plus implicit costs, that is, both explicit and implicit costs.

#### **Production Costs:**

The total costs of production of a firm are divided into total variable costs and total fixed costs. The total variable costs are those expenses of production which change with the change in the firm's output. Larger output requires larger inputs of labour, raw materials, power; fuel, etc. which increase the expenses of production. When output is reduced, variable costs also diminish. They cease when production stops altogether. Marshall called these variable costs as prime costs of production.

The total fixed costs, called supplementary costs by Marshall, are those expenses of production which do not change with the change in output. They are rent and interest payments, depreciation charges, wages and salaries of the permanent staff, etc. Fixed costs have to be incurred by the firm, even if it stops production temporarily. Since these costs are over and above the usual expenses of production, they are described as overhead costs in business parlance.

#### **Actual Costs and Opportunity Costs:**

Actual costs refer to the costs which a firm incurs for acquiring inputs or producing a good and service such as the cost of raw materials, wages, rent, interest, etc. The total money expenses recorded in the books of accounts are the actual costs.

Opportunity cost is the cost of sacrifice of the best alternative foregone in the production of a good or service. Since resources are scarce, they cannot be used to produce all things simultaneously. Therefore, if they are used to produce one thing, they have to be withdrawn from other uses. Thus the cost of the one is the alternative forgone. It is the opportunity missed or alternative forgone in having one thing rather than the other or in putting a factor-service to one use instead of the other.

The cost of using land for wheat growing is the value of alternative crop that could have been grown on it. The real cost of labour is what it could get in some alternative employment. The cost of capital to the capitalist is the amount of interest he could earn elsewhere. The normal earnings of management are what an entrepreneur could earn as a manager in some other joint stock company. In this way, opportunity cost is the cost of the opportunity missed or alternative forgone.

#### **Importance of Opportunity Cost:**

The concept of opportunity cost is very important in the following areas of managerial decision making:

##### **(i) Decision-Making and Efficient Resource Allocation:**

The concept of opportunity cost is very important for rational decision-making by the producer. Suppose, a producer has to decide whether he should produce black and white T.V. or colour T.V. from his given resources. He can come to rational decision only by measuring opportunity cost of production of both types of T.V. and by comparing these products with existing market prices.

As a result, efficient allocation of resources will also be possible. A resource will always be used in that business where it will have the highest opportunity cost. For example, if a graduate is receiving Rs. 3,000 as a shop assistant but can earn Rs. 5,000 as a clerk, then he will join the job of a clerk leaving the shop because his opportunity cost is high.

##### **(ii) Determination of Relative Prices of Goods:**

If the same group of resources can produce either a colour T.V. or four black and white T. V.s, the price of a colour T.V. will be kept equal to at least a four-fold price of a black and white T.V. Hence, the concept of opportunity cost is useful in the determination of relative prices of various goods.

### (iii) Determination of Normal Remuneration of a Factor:

Opportunity cost determines the price for the best alternative use of a factor of production. Suppose a manager can earn Rs. 20,000 per month as a lecturer in a management school, the firm will have to pay him at least Rs. 20,000 for continuing his service as a manager.

Hence, it is obvious that the concept of opportunity cost has special importance in management.

### Direct Costs and Indirect Costs:

Direct costs are the costs that have direct relationship with a unit of operation, i.e., they can be easily and directly identified or attributed to a particular product, operation or plant. For example, the salary of a branch manager, when the branch is a costing unit, is a direct cost. Direct costs directly enter into the cost of production but retain their separate identity.

On the other hand, indirect costs are those costs whose source cannot be easily and definitely traced to a plant, a product, a process or a department, such as electricity, stationery and other office expenses, depreciation on building, decoration expenses, etc. All the direct costs are variable because they are linked to a particular product or department. Therefore, they vary with changes in them. On the contrary, indirect costs may or may not be variable.

### Private and Social Costs:

Private costs are the costs incurred by a firm in producing a commodity or service. These<sup>a</sup> include both explicit and implicit costs. However, the production activities of a firm may lead to economic benefit or harm for others. For example, production of commodities like steel, rubber and chemicals, pollutes the environment which leads to social costs.

On the other hand, production of such services as education, sanitation services, park facilities, etc. leads to social benefits. Take for instance, education which not only provides higher incomes and other satisfactions to the recipients but also more enlightened citizens to the society. If we add together the private costs of production and economic damage upon others such as environmental pollution, etc., we arrive at social costs.

### Incremental Costs and Sunk Costs:

Incremental costs denote the total additional costs associated with the marginal batch of output. These costs are the additions to costs resulting from a change in the nature and level of business activity, e.g., change in product line or output level, adding or replacing a machine, changes in distribution channels, etc. In the long-run, firms expand their production, employ more men, materials, machinery and equipment. All these expenses are incremental costs.

Sunk costs are the costs that are not affected or altered by a change in the level or nature of business activity. It cannot be altered, increased or decreased by varying the level of activity or the rate of output. All past or actual costs are regarded as sunk costs. Thus, sunk costs are irrelevant for decision making as they do not vary with the changes expected for future by the management, whereas incremental costs are relevant to the management for business making.

### Explicit Costs and Implicit Costs:

Explicit costs are those payments that must be made to the factors hired from outside the control of the firm. They are the monetary payments made by the entrepreneur for purchasing or hiring the services of various productive factors which do not belong to him. Such payments as rent, wages, interest, salaries, payment for raw materials, fuel, power, insurance premium, etc. are examples of explicit costs.

Implicit costs refer to the payments made to the self-owned resources used in production. They are the earnings of owner's resources employed in their best alternative uses. For example, a business-man utilises his services in his own business leaving his job as a manager in a company.

Thus, he foregoes his salary as a manager. This loss of salary becomes an implicit cost of his own business. Implicit costs are also known as imputed costs. They are important for calculation of profit and loss account. They play a crucial role in the analysis of business decisions.

#### **Historical and Replacement Costs:**

The historical cost is the actual cost of an asset incurred at the time the asset was acquired. It means the cost of a plant at a price originally paid for it. In contrast, replacement cost means the price that would have to be paid currently for acquiring the same plant. So historical costs are the past costs and replacement costs are the present costs.

Price changes over time cause a difference between historical costs and replacement costs. For example, suppose that the price of a machine in 1995 was Rs. 1, 00,000 and its present price is Rs. 2, 50,000, the actual cost of Rs. 1, 00,000 is the historical cost while Rs. 2, 50,000 is the replacement cost.

The concept of replacement cost is very useful for the management. It projects a true picture while the historical cost gives poor projection to the management. Historical cost of assets is used for accounting purposes, in the assessment of net worth of the firm, while the replacement cost is used for business decision regarding the renovation of the firm.

#### **Past Costs and Future Costs:**

Past costs are the costs which have been actually incurred in the past. They are beyond the control of the management because they are already incurred. These costs can be evaluated with retro-spective effect. On the contrary, future costs refer to the costs that are reasonably expected to be incurred in some future periods.

They involve forecasting for control of expenses, appraisal of capital expenditure decisions on new projects as well as expansion programmers and profit-loss projections through proper costing under assumed cost conditions.

The management is more interested in future costs because it can exercise some control over them. If the management considers the future cost too high, it can either plan to reduce them or find out sources to meet them. These costs are also called avoidable costs or controllable costs.

#### **Business Costs and Full Costs:**

Business costs are the costs which include all the payments and contractual obligations made by the firm together with the book cost of depreciation on plant and equipment. They are relevant for the calculation of profits and losses in business, and for legal and tax purposes.

In contrast, full costs consist of opportunity costs and normal profit. Opportunity costs are the expected earnings from the next best use of the firm's resources. Normal profit is the minimum profit required for the existence of a firm.

#### **Common Production Costs and Joint Costs:**

Sometimes, two or more than two products emerge from a common production process and from a single raw material. For example, the same piece of leather may be used for slippers or shoes. Such products present some peculiar and important problems for the management. They are identifiable as separate products only at the end of the process. So the costs incurred upto this point are common costs. Thus, common costs are the costs which cannot be traced to separate products in any direct manner.

When an increase in the production of one product results in an increase in the output of another product, such products are joint products and their costs are joint costs. For example, when gas is produced from coal, coke and other products also emerge automatically. Likewise, wheat and straw, cotton and cotton seeds may be its other examples.

#### **Shutdown Costs and Abandonment Costs:**

Shutdown costs are the costs that are incurred in the case of a closure of plant operations. If the operations are continued, these costs can be saved. These costs include all types of fixed costs, the costs of sheltering plant and equipment, lay-off expenses, employment and training of workers when the operation is restarted.

On the other hand, abandonment costs are the costs which are incurred because of retiring altogether a plant from use. These costs are related to the problem of disposal of assets. For example, the costs are related to the discontinuance of tram services in Delhi.

These concepts of costs are very important for the management when they have to make decisions regarding the continuance of existing plant, suspension of its operations or its closure.

#### **Out-of-Pocket Costs and Book Costs:**

The costs which include cash payments or cash transfers that may be recurring or non-recurring are called out-of-pocket costs. All the explicit costs such as rent, wages, interest, transport charges, etc. are out-of-pocket costs. They are also called explicit costs.

Book costs are the actual business costs which enter into book accounts but are not paid in cash. They are considered while finalising the profit and loss accounts. For example, depreciation which does not require current cash payments. They are also called imputed costs. Book costs may be converted into out-of-pocket costs. If a factor of production is owned, that is book cost. But, if it is hired, that is out-of-pocket cost.

#### **Urgent Costs and Postponable Costs:**

Urgent costs are those costs that are necessary for the continuation of the firm's activities. The cost of raw materials, labour, fuel, etc. may be its examples which have to be incurred if production is to take place. The costs which can be postponed for some time, i.e., whose postponement does not affect the operational efficiency of the firm are called postponable costs. For example, maintenance costs which can be postponed for the time-being. This distinction of cost is very useful during war and inflation.

#### **Escapable Costs and Unavoidable Costs**

Escapable costs are the costs which can be reduced by contraction in business activities. Here, net effect on costs is important. However, it is difficult to estimate indirect effects such as the closure of an unprofitable business unit which will reduce costs but will increase the other related expenses like transportation charges, etc. On the other hand, unavoidable costs are the costs which do not vary with changes in the level of production, but they are unavoidable such as fixed costs.

#### **Incremental Costs and Marginal Costs**

There is close relation between marginal cost and incremental cost. But they have difference also. In reality, incremental cost is used in a broad sense in relation to marginal cost. Marginal cost is the cost of producing an additional unit of output, while incremental cost is defined as the change in cost resulting from a change in business activities.

In other words, incremental cost is the total additional cost related to marginal quantity of output. The concept of incremental cost is very important in the business world because, in practice, it is not possible to use every unit of input separately.

#### **The Cost Function:**

The cost function expresses a functional relationship between total cost and factors that determine it. Usually, the factors that determine the total cost of production ( $C$ ) of a firm are the output ( $Q$ ), the level of technology ( $T$ ), the prices of factors ( $P_f$ ) and the fixed factors ( $F$ ). Symbolically, the cost function becomes

$$C=f(Q, T, P_f, F)$$

Such a comprehensive cost function requires multi-dimensional diagrams which are difficult to draw. In order to simplify the cost analysis, certain assumptions are made. It is assumed that a firm produces a single homogeneous

good ( $q$ ) with the help of certain factors of production. Some of these factors are employed in fixed quantities whatever the level of output of the firm in the short run. So they are assumed to be given.

The remaining factors are variable whose supply is assumed to be known and available at fixed market prices. Further, the technology which is used for the production of the good is assumed to be known and fixed. Lastly, it is assumed that the firm adjusts the employment of variable factors in such a manner that a given output  $Q$  of the good  $q$  is obtained at the minimum total cost,  $C$ .

**Thus the total cost function is expressed as:**

$$C=f(Q)$$

Which means that the total cost ( $C$ ) is a function of output ( $Q$ ), assuming all other factors as constant. The cost function is shown diagrammatically by a total cost (TC) curve. The TC curve is drawn by taking output on the horizontal axis and total cost on the vertical axis, as shown in Figure 1.

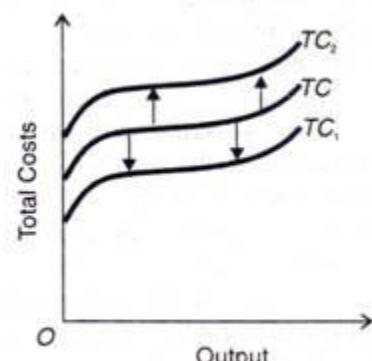


Fig. 1

It is a continuous curve whose shape shows that with increasing output total cost also increases. The total cost function and the TC curve relate total cost to output under given conditions. But if any of the given conditions such as the technique of production change, the cost function is changed.

For instance, if there is an improved technique of production, the cost of production for any given output will be less than before which will shift the new cost curve  $TC_1$  below the old curve  $TC$ , as shown in Figure 1. On the other hand, if the prices of factors rise, the cost of production will increase which will shift the cost curve upwards from  $TC$  to  $TC_2$  as shown in Figure 1.

#### Cost-Output Relation:

The Cost-output relation is discussed in the traditional and modern theories of costs under the short-run and long-run cost analysis which are explained as under.

#### The Traditional Theory of Costs:

The traditional theory of costs analyses the behaviour of cost curves in the short run and the long run and arrives at the conclusion that both the short run and the long run curves are U-shaped but the long-run cost curves are flatter than the short-run cost curves.

#### (A) Firm's Short-Run Cost Curves:

The short run is a period in which the firm cannot change its plant, equipment and the scale of organisation. To meet the increased demand, it can raise output by hiring more labour and raw materials or asking the existing labour force to work overtime.

#### Short-Run Total Costs:

The scale of organisation being fixed, the short-run total costs are divided into total fixed costs and total variable costs:

$$TC = TFC + TVC$$

Total Costs or TC:

Total costs are the total expenses incurred by a firm in producing a given quantity of a commodity. They include payments for rent, interest, wages, taxes and expenses on raw materials, electricity, water, advertising, etc.

#### **Total Fixed Costs or TFC:**

Are those costs of production that do not change with output. They are independent of the level of output. In fact, they have to be incurred even when the firm stops production temporarily. They include payments for renting land and buildings, interest or borrowed money, insurance charges, property tax, depreciation, maintenance expenditures, wages and salaries of the permanent staff, etc. They are also called overhead costs.

#### **Total Variable Costs or TVC:**

Are those costs of production that change directly with output. They rise when output increases, and fall when output declines. They include expenses on raw materials, power, water, taxes, hiring of labour, advertising etc., They are also known as direct costs.

The relation between total costs, variable costs and fixed costs is presented in Table 1, where column (1) indicates different levels of output from 0 to 10 units. Column (2) indicates that total fixed costs remain at Rs. 300 at all levels of output. Column (3) shows total variable costs which are zero when output is nothing and they continue to increase with the rise in output.

In the beginning they rise quickly, and then they slow down as the firm enjoys economies of large scale production with further increases in output and later on due to diseconomies of production, the variable costs start rising rapidly. Column (4) relates to total costs which are the sum of columns (2), and (3) i.e.,  $TC = TFC + TVC$ . Total costs vary with total variable costs when the firm starts production.

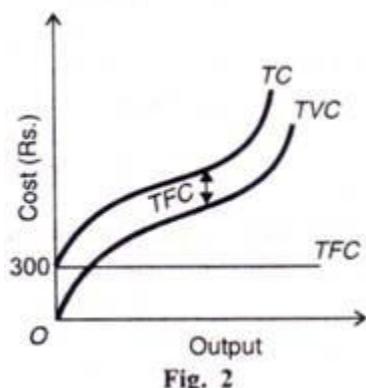


Fig. 2

The curves relating to these three total costs are shown diagrammatically in Figure 2. The TC curve is a continuous curve which shows that with increasing output total costs also increase. This curve cuts the vertical axis at a point above the origin and rises continuously from left to right. This is because even when no output is produced, the firm has to incur fixed costs.

**TABLE 1 : COST FUNCTION IN THE SHORT-RUN**

<i>TO (1)</i>	<i>TFC (2)</i>	<i>TVC (3)</i>	<i>TC (4)</i>	<i>AFC (5) (2+1)</i>	<i>AVC (6) (3+1)</i>	<i>ATC (7) (5+6) or(4+1)</i>	<i>MC (8)</i>
0	300	0	300	300	0	300	—
1	300	300	600	300	300	600	300
2	300	400	700	150	200	350	100
3	300	450	750	100	150	250	50
4	300	500	800	75	125	200	50
5	300	600	900	60	120	180	100
6	300	720	1020	50	120	170	120
7	300	890	1190	42.9	127.1	170	170
8	300	1100	1400	37.5	137.5	175	210
9	300	1350	1650	33.3	150	183.3	470
10	300	2000	2300	30	200	230	650

The TFC curve is shown as parallel to the output axis because total fixed costs are the same (Rs. 300) whatever the level of output. The TVC curve has an inverted-S shape and starts from the origin O because when output is zero, the TVCs are also zero. They increase as output increases.

So long as the firm is using less variable factors in proportion to the fixed factors, the total variable costs rise at a diminishing rate. But after a point, with the use of more variable factors in proportion to the fixed factors, they rise steeply because of the application of the law of variable proportions. Since the TFC curve is a horizontal straight line, the TC curve follows the TVC curve at an equal vertical distance.

#### Short-Run Average Costs:

In the short run analysis of the firm, average costs are more important than total costs. The units of output that a firm produces do not cost the same amount to the firm. But they must be sold at the same price. Therefore, the firm must know the per unit cost or the average cost. The short-run average costs of a firm are the average fixed costs, the average variable costs, and the average total costs.

Average Fixed Costs or AFC equal total fixed costs at each level of output divided by the number of units produced:

$$AFC = TFC/Q$$

The average fixed costs diminish continuously as output increases. This is natural because when constant total fixed costs are divided by a continuously increasing unit of output, the result is continuously diminishing average fixed costs. Thus the AFC curve is a downward sloping curve which approaches the quantity axis without touching it, as shown in Figure 3. It is a rectangular hyper-bola.

Short-Run Average Variable Costs (or SAVC) equal total variable costs at each level of output divided by the number of units produced:

$$SAVC = TVC/Q$$

The average variable costs first decline with the rise in output as larger quantities of variable factors are applied to fixed plant and equipment. But eventually they begin to rise due to the law of diminishing returns. Thus the SAVC curve is U-shaped, as shown in Figure 3.

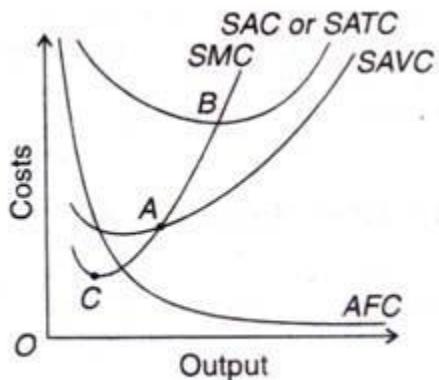


Fig. 3

Short-Run Average Total Costs (or SATC or SAC) are the average costs of producing any given output.

They are arrived at by dividing the total costs at each level of output by the number of units produced:

$$\text{SAC or SATC} = \frac{\text{TC}}{Q} = \frac{\text{TFC}}{Q} + \frac{\text{TVC}}{Q} = \text{AFC} + \text{AVC}$$

Average total costs reflect the influence of both the average fixed costs and average variable costs. At first average total costs are high at low levels of output because both average fixed costs and average variable costs are large. But as output increases, the average total costs fall sharply because of the steady decline of both average fixed costs and average variable costs till they reach the minimum point.

This results from the internal economies, from better utilisation of existing plant, labour, etc. The minimum point B in the figure represents optimal capacity. As production is increased after this point, the average total costs rise quickly because the fall in average fixed costs is negligible in relation to the rising average variable costs.

The rising portion of the SAC curve results from producing above capacity and the appearance of internal diseconomies of management, labour, etc. Thus the SAC curve is U-shaped, as shown in Figure 3.

#### Why is SAC curve U-shaped?

The U-shape of the SAC curve can also be explained in terms of the law of variable proportions. This law tells that when the quantity of one variable factor is changed while keeping the quantities of other factors fixed, the total output increases but after some time it starts declining.

Machines, equipment and scale of production are the fixed factors of a firm that do not change in the short run. On the other hand, factors like labour and raw materials are variable. When increasing quantities of variable factors are applied on the fixed factors, the law of variable proportions operates.

When, say the quantities of a variable factor like labour are increased in equal quantities, production rises till fixed factors like machines, equipment, etc. are used to their maximum capacity. In this stage, the average costs of the firm continue to fall as output increases because it operates under increasing returns.

Due to the operation of the law of increasing returns when the variable factors are increased further, the firm is able to work the machines to their optimum capacity. It produces the optimum output and its average costs of production will be the minimum which is revealed by the minimum point of the SAC curve, point B in Figure 3.

If the firm tries to raise output after this point by increasing the quantities of the variable factors, the fixed factors like machines would be worked beyond their capacity. This would lead to diminishing returns. The average costs will start rising rapidly. Hence, due to the working of the law of variable proportions the short-run AC curve is U-shaped.

#### Short Run Marginal Cost:

A fundamental concept for the determination of the exact level of output of a firm is the marginal cost.

**Marginal cost is the addition to total cost by producing an additional unit of output:**

$$SMC = \Delta TC / \Delta Q$$

Algebraically, it is the total cost of  $n + 1$  units minus the total cost of  $n$  units of output  $MC_n = TC_{n+1} - TC_n$ . Since total fixed costs do not change with output, therefore, marginal fixed cost is zero. So marginal cost can be calculated either from total variable costs or total costs. The result would be the same in both the cases. As total variable costs or total costs first fall and then rise, marginal cost also behaves in the same way. The SMC curve is also U-shaped, as shown in Figure 3.

#### Conclusion:

Thus the short-run cost curves of a firm are the SAVC curve, the AFC curve, the SAC curve and the SMC curve. Out of these four curves, the AFC curve is insignificant for the determination of the firm's exact output and is, therefore, generally neglected.

#### (B) Firm's Long-Run Cost Curves:

In the long run, there are no fixed factors of production and hence no fixed costs. The firm can change its size or scale of plant and employ more or less inputs. Thus in the long run all factors are variable and hence all costs are variable.

The long run average total cost or LAC curve of the firm shows the minimum average cost of producing various levels of output from all-possible short-run average cost curves (SAC). Thus the LAC curve is derived from the SAC curves. The LAC curve can be viewed as a series of alternative short-run situations into any one of which the firm can move.

Each SAC curve represents a plant of a particular size which is suitable for a particular range of output. The firm will, therefore, make use of the various plants up to that level where the short-run average costs fall with increase in output. It will not produce beyond the minimum short-run average cost of producing various outputs from all the plants used together.

Let there be three plants represented by their short-run average cost curves  $SAC_1$ ,  $SAC_2$  and  $SAC_3$  in Figure 4. Each curve represents the scale of the firm.  $SAC_1$  depicts a lower scale while the movement from  $SAC_2$  to  $SAC_3$  shows the firm to be of a larger size. Given this scale of the firm, it will produce up to the least cost per unit of output. For producing ON output, the firm can use  $SAC_1$  or  $SAC_2$  plant.

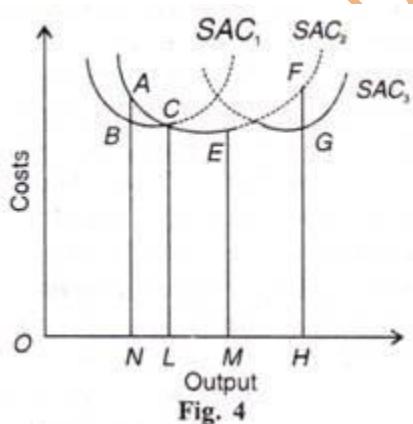


Fig. 4

The firm will, however, use the scale of plant represented by  $SAC_3$  since the average cost of producing ON output is NB which is less than NA, the cost of producing this output on the  $SAC_2$  plant. If the firm is to produce OL output, it can produce at either of the two plants. But it would be advantageous for the firm to use the plant SA C2 for the OL level of output.

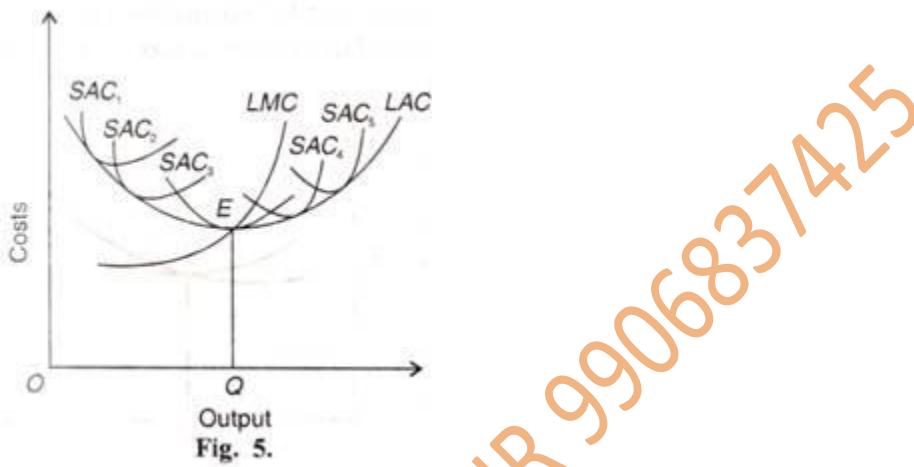
But it would be more profitable for the firm to produce the larger output OM at the lowest average cost ME from this plant. However, for output OH, the firm would use the  $SAC_1$  plant where the average cost HG is lower than HF

of the SAC2 plant. Thus in the long-run in order to produce any level of output the firm will use that plant which has the minimum unit cost.

If the firm expands its scale by the three stages represented by SAC1, SAC2 and SAC3 curves, the thick wave-like portions of these curves form the long-run average cost curve. The dotted portions of these SAC curves are of no consideration during the long run because the firm would change the scale of plant rather than operate on them.

But the long-run average cost curve LAC is usually shown as a smooth curve fitted to the SAC curves so that it is tangent to each of them at some point, as shown in Figure 5, where SAC1, SAC2, SAC3, SAC4 and SAC5 are the short-run cost curves. It is tangent to all the SAC curves but only to one at its minimum point.

The LAC is tangent to the lowest point E of the curve SAC3 in Figure 5 at OQ optimum output. The plant SAC3 which produces this OQ optimum output at the minimum cost QE is the optimum plant, and the firm producing this optimum output at the minimum cost with this optimum plant is the optimum firm. If the firm produces less than the optimum output OQ, it is not working its plant to full capacity and if it produces beyond it is overworking its plants. In both the cases, the plants SAC2 and SAC4 have higher average costs of production than the plant SAC3



The LAC curve is known as the "envelope" curve because it envelopes all the SAC curves. According to Prof. Chamberlin, "It is composed of plant curves; it is the plant curve. But it is better to call it a "planning" curve because the firm plans to expand its scale of production over the long run."

The long-run marginal cost (LMC) curve of the firm intersects SAC1 and LAC curves at the minimum point E.

#### LAC Curve Flatter than SAC Curve:

Though the long-run average cost (LAC) curve is U-shaped, yet it is flatter than the short-run average cost (SAC) curve. It means that the LAC curve first falls slowly and then rises gradually after a minimum point is reached.

- Initially, the LAC gradually slopes downwards due to the availability of certain economies of scale like the economical use of indivisible factors, increased specialisation and the use of technologically more efficient machines or factors. The returns to scale increase because of the indivisibility of factors of production.

When a business unit expands, the returns to scale increase because the indivisible factors are employed to their maximum capacity. Further, as the firm expands, it enjoys internal economies of production. It may be able to install better machines, sell its products more easily, borrow money cheaply, procure the services of more efficient manager and workers, etc. All these economies help in increasing the returns to scale more than proportionately.

- After the minimum point of the long-run average cost is reached, the LAC curve may flatten out over a certain range of output with the expansion of the scale of production. In such a situation, the economies and diseconomies balance each other and the LAC curve has a flat base.

- With further expansion of scale, the diseconomies like the difficulties of coordination, management, labour and transport arise which more than counterbalance the economies so that the LAC curve begins to rise. This happens

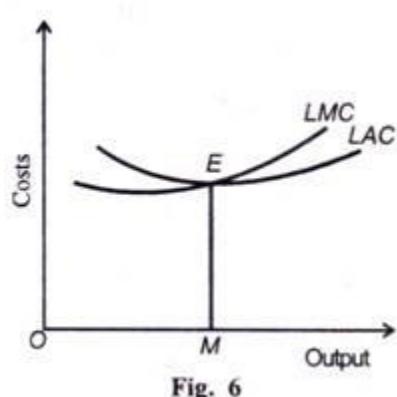
when the indivisible factors become inefficient and less productive due to the over expansion of the scale of production. Moreover, when supervision and coordination become difficult, the per unit cost increases. To these internal diseconomies are added external diseconomies of scale.

These arise from higher factor prices or from diminishing productivities of factors. As the industry continues to expand, the demand for skilled labour, land, capital, etc. rises. Transport and marketing difficulties also emerge. Prices of raw materials go up. All these factors lead to diminishing returns to scale and tend to raise costs.

#### **Conclusion:**

The LAC curves first falls and then rises more slowly than the SAC curve because in the long run all costs become variable and few are fixed. The plant and equipment can be altered and adjusted to the output. The existing factors can be worked fully and more efficiently so that both the average fixed costs and average variable costs are lower in the long run than in the short run. That is why, the LAC curve is flatter than the SAC curve.

Similarly, the LMC curve is flatter than the SMC curve because all costs are variable and there are few fixed costs. In the short-run, the marginal cost is related to both the fixed and variable costs. As a result, the SMC curve falls and rises more swiftly than the LMC curve. The LMC curve bears the usual relation to the LAC curve. It first falls and is below the LAC curve. Then rises and cuts the LAC curve at its lowest point E and is above the latter throughout its length, as shown in Figure 6.



#### **The Modern Theory of Costs:**

The modern theory of costs differs from the traditional theory of costs with regard to the shapes of the cost curves. In the traditional theory, the cost curves are U-shaped. But in the modern theory which is based on empirical evidences, the short-run SAVC curve and the SMC curve coincide with each other and are a horizontal straight line over a wide range of output. So far as the LAC and LMC curves are concerned, they are L-shaped rather than U-shaped. We discuss below the nature of short-run and long-run cost curves according to the modern theory.

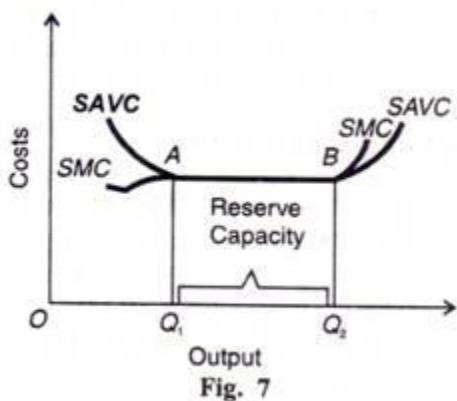
##### **(1) Short-Run Cost Curves:**

As in the traditional theory, the short-run cost curves in the modern theory of costs are the AFC, SAVC, SAC and SMC curves. As usual, they are derived from the total costs which are divided into total fixed costs and total variable costs.

But in the modern theory, the SAVC and SMC curves have a saucer-type shape or bowl-shape rather than a U-shape. As the AFC curve is a rectangular hyperbola, the SAC curve has a U-shape even in the modern version. Economists have investigated on the basis of empirical studies this behaviour pattern of the short-run cost curves.

According to them, a modern firm chooses such a plant which it can operate easily with the available variable direct factors. Such a plant possesses some reserve capacity and much flexibility. The firm installs this type of plant in order to produce the maximum rate of output over a wide range to meet any increase in demand for its product.

The saucer-shaped SAVC and SMC curves are shown in Figure 7. To begin with, both the curves first fall upto point A and the SMC curve lies below the SAVC curve. "The falling part of the SAVC shows the reduction in costs due to the better utilisation of the fixed factor and the consequent increase in skills and productiv-ity of the variable factor (labour).



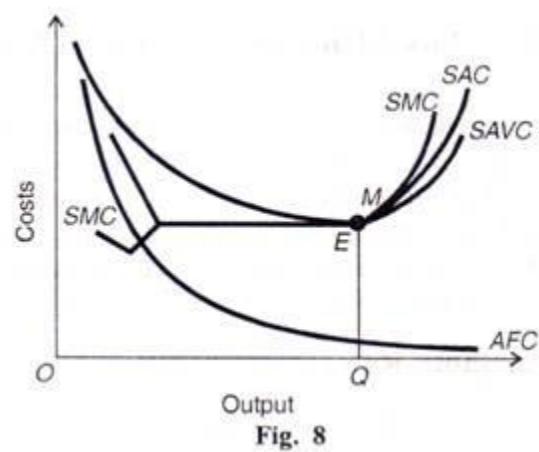
With better skills, the wastes in raw materials are also being reduced and a better utilisation of the whole plant is reached." So far as the flat stretch of the saucer-shaped SAVC curve over  $Q_1$ : $Q_2$  range of output is concerned, the empirical evidence reveals that the operation of a plant within this wide range exhibits constant returns to scale.

The reason for the saucer-shaped SAVC curve is that the fixed factor is divisible. The SAV costs are constant over a large range, up to the point at which all of the fixed factor is used. Moreover, the firm's SAV costs tend to be constant over a wide range of output because there is no need to depart from the optimal combination of labour and capital in those plants that are kept in operation.

Thus there is a large range of output over which the SAVC curve will be flat. Over that range, SMC and SAVC are equal and are constant per unit of output. The firm will, therefore, continue to produce within  $Q_1$  $Q_2$  reserve capacity of the plant, as shown in Figure 7.

After point B, both the SAVC and SMC curves start rising. When the firm departs from its normal or the load factor of the plant in order to obtain higher rates of output beyond  $Q_2$ , it leads to higher SAVC and SMC. The increase in costs may be due to the over-time operations of the old and less efficient plant leading to frequent breakdowns, wastage of raw materials, reduction in labour productivity and increase in labour cost due to overtime operations. In the rising portion of the SAVC curve beyond point B, the SMC curve lies above it.

The short-run average total cost curve (SATC or SAC) is obtained by adding vertically the average fixed cost curve (AFC) and the SAVC curve at each level of output. The SAC curve, as shown in Figure 8, continues to fall up to the  $OQ$  level of output at which the reserve capacity of the plant is fully exhausted.



Beyond that output level, the SAC curve rises as output increases. The smooth and continuous fall in the SAC curve upto the OQ level of output is due to the fact that the AFC curve is a rectangular hyperbola and the SAVC curve first falls and then becomes horizontal within the range of reserve capacity. Beyond the OQ output level, it starts rising steeply. But the minimum point M of the SAC curve where the SMC curve intersects it, is to the right of point E of the SAVC curve. This is because the SAVC curve starts rising steeply from point E while the AFC curve is falling at a very low rate.

## (2) Long-Run Cost Curves:

Empirical evidence about the long-run average cost curve reveals that the LAC curve is L-shaped rather than U-shaped. In the beginning, the LAC curve rapidly falls but after a point “the curve remains flat, or may slope gently downwards, at its right-hand end.” Economists have assigned the following reasons for the L-shape of the LAC curve.

### 1. Production and Managerial Costs:

In the long run, all costs being variable, production costs and managerial costs of a firm are taken into account when considering the effect of expansion of output on average costs. As output increases, production costs fall continuously while managerial costs may rise at very large scales of output. But the fall in production costs outweighs the increase in managerial costs so that the LAC curve falls with increases in output. We analyse the behaviour of production and managerial costs in explaining the L-shape of the LAC curve.

#### Production Costs:

As a firm increases its scale of production, its production costs fall steeply in the beginning and then gradually. This is due to the technical economies of large scale production enjoyed by the firm. Initially, these economies are substantial. But after a certain level of output when all or most of these economies have been achieved, the firm reaches the minimum optimal scale or minimum efficient scale (MES).

Given the technology of the industry, the firm can continue to enjoy some technical economies at outputs larger than the MES for the following reasons:

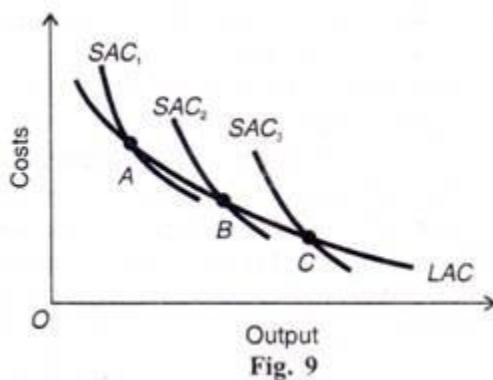
- (a) from further decentralisation and improvement in skills and productivity of labour; (b) from lower repair costs after the firm reaches a certain size; and

#### Managerial Costs:

In modern firms, for each plant there is a corresponding managerial set-up for its smooth operation. There are various levels of management, each having a separate management technique applicable to a certain range of output. Thus, given a managerial set-up for a plant, its managerial costs first fall with the expansion of output and it is only at a very large scale output, they rise very slowly.

To sum up, production costs fall smoothly and managerial costs rise slowly at very large scales of output. But the fall in production costs more than offsets the rise in managerial costs so that the LAC curve falls smoothly or becomes flat at very large scales of output, thereby giving rise to the L-shape of the LAC curve.

In order to draw such an LAC curve, we take three short-run average cost curves SAC<sub>1</sub> SA C<sub>2</sub>, and SAC<sub>3</sub> representing three plants with the same technology in Figure 9. Each SAC curve includes production costs, managerial costs, other fixed costs and a margin for normal profits. Each scale of plant (SAC) is subject to a typical load factor capacity so that points A, B and C represent the minimal optimal scale of output of each plant.

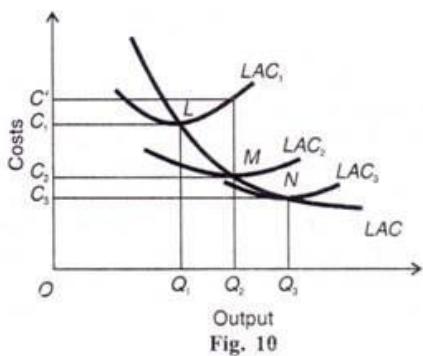


By joining all such points as A, B and C of a large number of SACs, we trace out a smooth and continuous LAC curve, as shown in Figure 9. This curve does not turn up at very large scales of output. It does not envelope the SAC curves but intersects them at the optimal level of output of each plant.

### 2. Technical Progress:

Another reason for the existence of the L-shaped LAC curve in the modern theory of costs is technical progress. The traditional theory of costs assumes no technical progress while explaining the U-shaped LAC curve. The empirical results on long-run costs conform the widespread existence of economies of scale due to technical progress in firms.

The period between which technical progress has taken place, the long-run average costs show a falling trend. The evidence of diseconomies is much less certain. So an upturn of the LAC at the top end of the size scale has not been observed. The L-shape of the LAC curve due to technical progress is explained in Figure 10.



Suppose the firm is producing  $OQ_1$  output on  $LAC_1$  curve at a per unit cost of  $OC_1$ . If there is an increase in demand for the firm's product to  $OQ_2$ , with no change in technology, the firm will produce  $OQ_2$  output along the  $LAC_1$  curve at a per unit cost of  $OC_2$ . If, however, there is technical progress in the firm, it will install a new plant having  $LAC_2$  as the long-run average cost curve. On this plant, it produces  $OQ_2$  output at a lower cost  $OC_2$  per unit.

Similarly, if the firm decides to increase its output to  $OQ_3$  to meet further rise in demand technical progress may have advanced to such a level that it installs the plant with the  $LAC_3$  curve. Now it produces  $OQ_3$  output at a still lower cost  $OC_3$  per unit. If the minimum points, L, M and N of these U-shaped long-run average cost curves  $LAC_1$ ,  $LAC_2$  and  $LAC_3$  are joined by a line, it forms an L-shaped gently sloping downward curve  $LAC$ .

### 3. Learning:

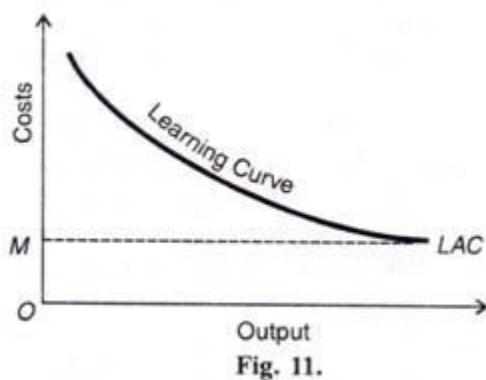
Another reason for the L-shaped long-run average cost curve is the learning process. Learning is the product of experience. If experience, in this context, can be measured by the amount of a commodity produced, then higher the production is, the lower is per unit cost.

The consequences of learning are similar to increasing re-turns. First, the knowledge gained from working on a large scale cannot be forgotten. Second, learning increases the rate of productivity. Third, experience is measured by the aggregate output produced since the firm first started to produce the product.

Learning-by-doing has been observed when firms start producing new products. After they have produced the first unit, they are able to reduce the time required for production and thus reduce their per unit costs. For example, if a firm manufactures airframes, the fall observed in long-run average costs is a function of experience in producing one particular kind of airframe, not airframes in general.

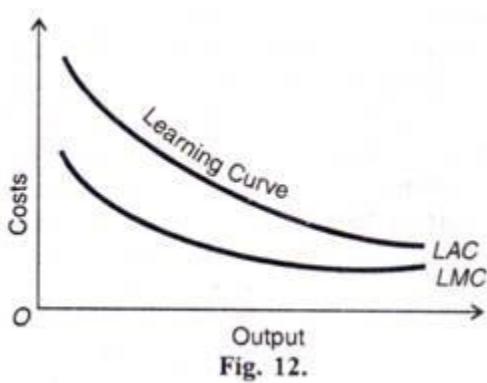
One can, therefore, draw a “learning curve” which relates cost per airframe to the aggregate number of airframes manufactured so far, since the firm started manufacturing them. Figure 11 shows a learning curve LAC which relates the cost of producing a given output to the total output over the entire time period.

Growing experience with making the product leads to falling costs as more and more of it is produced. When the firm has exploited all learning possibilities, costs reach a minimum level, M in the figure. Thus, the LAC curve is L-shaped due to learning by doing.



#### Relation between LAC and LMC Curves:

In the modern theory of costs, if the LAC curve falls smoothly and continuously even at very large scales of output, the LMC curve will lie below the LAC curve throughout its length, as shown in Figure 12.



If the LAC curve is downward sloping up to the point of a minimum optimal scale of plant or a mini-mum efficient scale (MES) of plant beyond which no further scale economies exist, the LAC curve becomes horizontal. In this case, the LMC curve lies below the LAC curve until the MES point M is reached, and beyond this point the LMC curve coincides with the LA C curve, as shown in Figure 13.

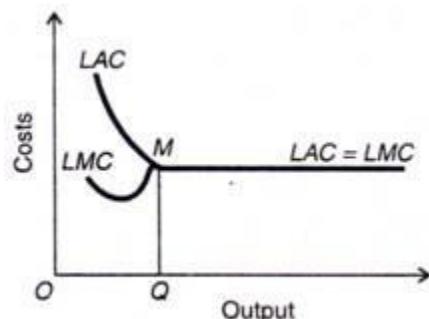


Fig. 13.

**Conclusion:**

The majority of empirical cost studies suggest that the U-shaped cost curves postulated by the traditional theory are not observed in the real world. Two major results emerge predominantly from most studies. First, the SAVC and SMC curves are constant over a wide-range of output.

Second, the LAC curve falls sharply over low levels of output, and subsequently remains practically constant as the scale of output increases. This means that the LAC curve is L-shaped rather than U-shaped. Only in very few cases diseconomies of scale were observed, and these at very high levels of output.

**Economies of Scale and the LAC Curve:**

The shape of the LAC curve depends fundamentally upon the internal economies and diseconomies of scale, while the shift in the LAC curve depends upon external economies and diseconomies of scale. The LAC curve first declines slowly and then rises gradually after a minimum point is reached.

Initially, the LAC curve slopes downwards due to the availability of certain internal economies of scale to the firm like the economical use of indivisible factors, increased specialisation, use of technologically more efficient machines, better managerial and marketing organisation, and benefits of pecuniary economies. All these economies lead to increasing returns to scale. It means that as output increases, the LAC curve declines, as shown in Figure 14 where the LAC curve falls gradually up to point M.

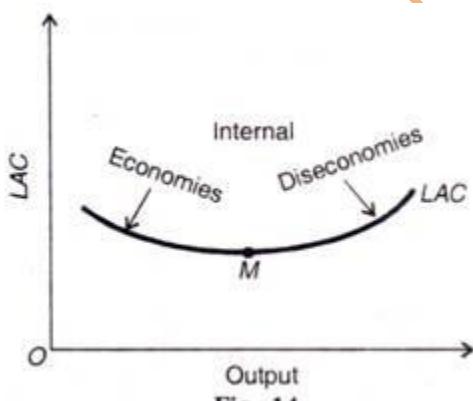


Fig. 14

The economies of scale exist only up to this point which is the optimum point of the LAC curve. If the firm expands its output further than this optimum level, diseconomies of scale arise. The diseconomies of scale result from lack of coordination, inefficiencies in management, and problems in marketing, and increases in factor prices as the firm expands its scale.

As a result, there are decreasing returns to scale which turn the LAC curve upwards, as shown in the figure where the LAC curve starts rising from point M. Thus internal economies and diseconomies of scale are built into the shape of the LAC curve because they accrue to the firm from its own actions as it expands its output level. They relate only to the long run.

On the other hand, external economies and diseconomies of scale affect the position of the LAC curve. External economies of scale are external to a firm and accrue to it from actions of other firms when the output of the whole industry expands. They reflect interdependence among firms in an industry.

They are realised by a firm when other firms in the industry make inventions and evolve specialisation in production processes thereby reducing its per unit cost. They also arise to firms in an industry from reductions in factor prices. As a result, per unit cost falls and the LAC curve shifts downwards as shown by the shifting of the LAC curve to  $LAC_1$  in Figure 15.

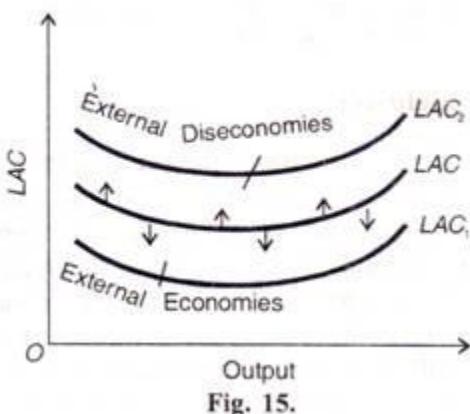


Fig. 15.

On the contrary, external diseconomies shift the LAC curve upwards. External diseconomies arise solely through a rise in the market prices of factors used in an industry. When an industry expands, the increase in the demand for factors like labour, capital, equipment, raw materials, power, etc. rises and when the industry is unable to meet this demand due to shortages, per unit cost of firms rises. As a result, the LAC curve shifts upwards, as shown by the shifting of the LAC curve to  $LAC$  in Fig. 15.

#### Elasticity of Cost:

If output ( $Q$ ) is produced at a total cost ( $T$ ), the cost function is  $T=f(Q)$ . The elasticity of total cost is the ratio of the proportional change in total cost to the proportional change in output. It may be written as

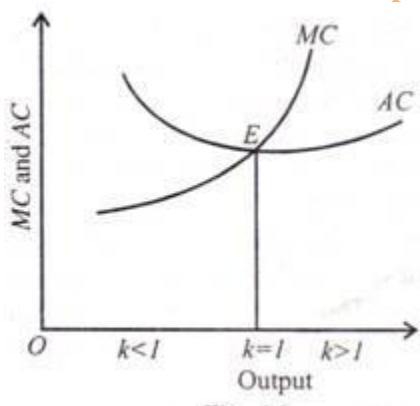


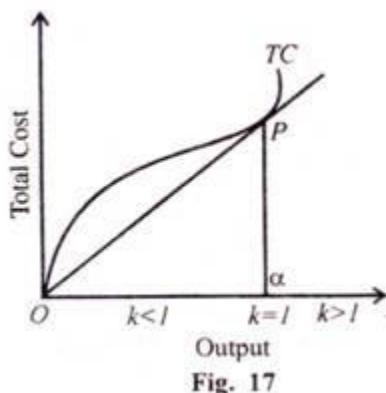
Fig. 16

Thus, cost elasticity ( $\kappa$ ) is equal to the ratio of marginal cost ( $dT/dQ$ ) to average cost ( $T/Q$ ). It follows from this that if  $MC < AC$ ,  $\kappa > 1$ . It means that when  $MC < AC$ ,  $\kappa > 1$ . Diagrammatically, when the MC curve is rising and is above the AC curve,  $\kappa > 1$ , as shown by the area right to point E in Figure 16.

It is the case of decreasing returns. When  $MC = AC$ ,  $\kappa = 1$ , it is the point E where the MC curve cuts the AC curve from below in the figure. It is the case of constant returns. When  $MC < AC$ ,  $\kappa < 1$ , shown as the area to the left of point E in the figure, where the MC curve is falling and is below the AC curve. It is the case of increasing returns.

Since the average cost and the marginal cost are derived from the total cost in relation to the output, the shapes of the AC curve and the MC curve can also be checked from the shape of the total cost curve. If P is the point on the total cost curve at a given output Q, then the average cost is to be read off as the gradient of OP and the marginal cost as the tangent at P.

This is shown in Figure 17. The figure, further, reveals that the elasticity of total cost increases continuously with increases in output from less than unity to greater than unity. At first, cost elasticity is less than unity for small outputs, and finally, it is greater than unity for large outputs. In other words, if we take  $\kappa = 1$  at some definite level of output,  $Q = a$ , then  $k < 1$  for outputs  $Q < a$ , and  $k > 1$  for outputs  $Q > a$ . This is illustrated in Figure 17.



### MARKET

The term market refer to particular medium through which buyer & seller meet each other and buy and sell the goods & services.

#### Characteristics of Market :

- A. Existence of Buyer and Seller
- B. Communication between Buyer and Seller
- C. Place and Medium through which interact.
- D. Commodity and services demanded and sold
- E. Entry and Exit of Buyer and Seller
- F. Any types of Competition among seller
- G. Knowledge about market
- Market is a place where buyers and sellers meet each other to effect a business transactions.
- Market is divided in to perfect competition market and imperfect competition market.
- Imperfect market includes monopoly, monopolistic competition, oligopoly, duopoly, monopsony, bilateral monopoly.

### PERFECT COMPETITION

The Perfect Competition is a form of market situation in which there is a large number of buyers and sellers, who buy and sell. It can sell its output in the market at the fixed equilibrium price of output by the industry.

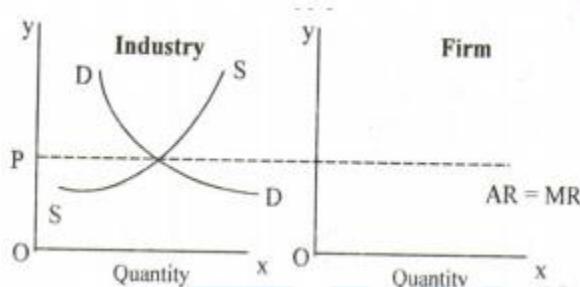
#### Feature of Perfect Competition :

1. There are a large number of undifferentiated buyer and sellers.
2. The sellers sell homogeneous products.
3. There is no restrictions on the entry and exists of the buyer and seller.
4. Both buyers and sellers have the perfect knowledge of the market.
5. All the factors are perfectly mobile.
6. The market price must be flexible over a period of time is to the changing conditions of supply and demand.
7. There should not be any artificial restriction on the demand and supply, prices of goods and factors of production in the market.
8. A perfectly competitive market assumes the non-existence of transport cost.

9. Under perfect competitive market there is a separate existence of industry and its group of firm fixes the selling price.

#### How price determine under perfect competition?

Ans.: Industry is a group of producers or firms. In a perfectly competitive market the equilibrium price of a commodity is determined by the intersection of the market demand curve and the market supply curve. Market demand curve is the horizontal summation of the individual demand curves whereas market supply curve is the horizontal summation of the firms supply curves.

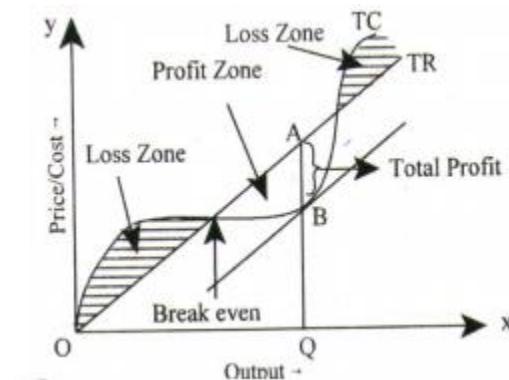


In the above figure, DD is the market demand curve, while SS is the market supply curve. Equilibrium is attained at T where two curves intersect. At equilibrium price OP, the quantity sold by the industry is OQ. The price so determined by the industry is accepted by each individual firm as given. Under conditions of perfect competition, an industry is the price maker, while a firm is a taker.

#### Conditions of Equilibrium of a Firm:

- (i) A firm will be in equilibrium when it has no tendency to increase or contract level of output.
  - (ii) Marginal cost of the firm must be equal to marginal revenue ( $MC = MR$ ).
  - (iii) Marginal cost (MC) must cut marginal revenue (MR) curve from below. A competitive firm, in order to reach equilibrium will produce output at a given price which maximizes its profit and minimizes the loss. There are two approaches to explain equilibrium of a competitive firm.
- (i) Total Revenue and Total Cost Approach
  - (ii) Marginal revenue and Marginal Cost Approach
- (i) Total Revenue and Total Cost Approach : It is the simplest way to determine the equilibrium of firm. In order to find out the profit of firm. The difference between total revenue and the total cost is maximum, symbolically

$$\text{Profit} = \text{Total Revenue} - \text{Total Cost}$$



In the above figure, TC is the total cost and TR is the total Revenue curve of the firm. The difference between TR and TC is measured by the vertical distance at a point on two curves. The vertical distance between TR and TC

curves is the maximum at OQ output. Firm obtains AB profit at equilibrium level of output. In case the firm decide to produce any output, other than the equilibrium output its profit will fall.

(ii) Marginal Revenue Marginal Cost Approach : At different levels of output the profits of a firm will be maximum at that level of output whose MC is equal to MR.

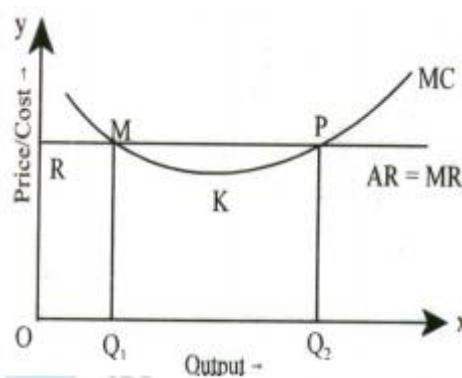
$$MR = MC$$

Or  $MR - MC = \text{Zero}$

MR and MC equality approach to firms equilibrium i.e. based on two conditions.

(a) First Order or Necessary Condition : The firm's MC must be equal to its MR at the equilibrium level of output.

(b) Second Order or Sufficient Condition : At the equilibrium level of output the MC should be rising i.e. the MC curve should have a positive slope.



Firm's first order condition of equilibrium is satisfied both at point M and point P, where MC Curve intersects the MR Curve. However at point M firm does not get maximum profit because the second order condition of equilibrium is not satisfied. In case the firm decides to produce output more than OQ2, its MC being less than MR, It will earn profits. The firm would extend the output up to OQ2 level (where both the conditions are satisfied) and at equilibrium point P because with this output

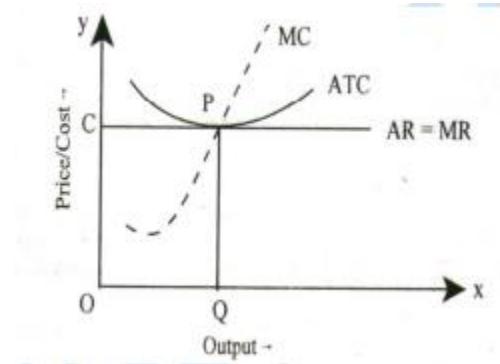
- (a)  $MC = MR$
- (b) MC curve interest MR curve from below.

**Describe the Price - Output Equilibrium of Firm under Perfect Competition in Short-Run.**

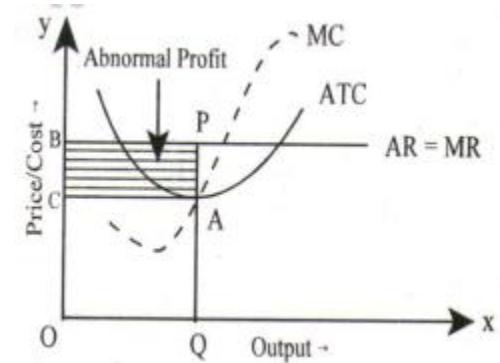
In short run, under perfect competition, a firm may earn or suffer :-

- (1) Normal Profit
- (2) Abnormal Profit
- (3) Losses

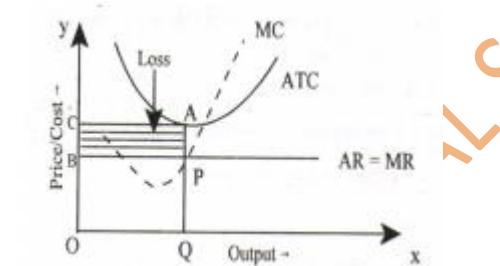
(1) Normal Profit: The figure shows that P is the equilibrium point of a firm. It is the level where  $MC = MR$  At output OQ and price OC,  $AR = ATC$ . At this level the firm will neither earn profit nor suffer loss i.e. it is the normal profit level.



(2) Abnormal Profit: Profit will be maximum when MC curve cuts the MR curve from below. Thus the equilibrium is at point P. At output OQ and price OB,  $AR > ATC$ . It represents that the firm earns an abnormal profit. (i.e. BCAP).



(3) Losses: the equilibrium of the firms is at point P where  $MC = MR$ . At output OQ and price OB, the firm suffers losses (i.e. CBPA), Since the  $AR < ATC$ .



#### POINT TO REMEMBER FOR PERFECT COMPETITION:

- It is also known as myth.
- Large numbers of sellers and buyers.
- Homogenous products.
- Free entry and exit.
- Factor mobility.
- No transportation and selling cost.
- Price takers.
- Perfect knowledge.
- Automatic price mechanism according to demand & supply.
- Highly elastic demand.
- No discrimination.
- Demand curve of the firm is perfectly elastic in it.
- Firms are very small and are large in numbers.
- Absence of government regulations.
- Uniform & low price.
- When the ownership is one it is called firm and group of small firms known as industry.

- Conditions for equilibrium is  $MC=MR$ .  $MC$  should cut  $MR$  curve from below at the equilibrium point.
- In short run perfect competition market has supernormal profit, normal profit and loss.
- Supernormal profit when Average revenue > average cost.
- Normal profit when Average revenue = average cost
- Loss is when Average revenue < average cost
- In long run perfect competition has only normal profit left with them because when there is an abnormal profit a firm starts entering into a market then the firms come in a normal profit and when the firm faces a loss then the firm starts existing the market as a result again it come to a normal profit.

**BREAK EVEN POINT:** BEP refer to fire's that level of output at which its  $TR = TC$ . At this point the firm gets neither super normal profit, nor incur losses but gets normal profit only.

#### MONOPOLY:

In a monopoly market, factors like government license, ownership of resources, copyright and patent and high starting cost make an entity a single seller of goods. All these factors restrict the entry of other sellers in the market. Monopolies also possess some information that is not known to other sellers.

Characteristics associated with a monopoly market make the single seller the market controller as well as the price maker. He enjoys the power of setting the price for his goods.

#### POINTS TO REMEMBER ABOUT MONOPOLY:

- A situation where there is only one producer is called monopoly.
- Only one seller and large number of buyers.
- Different products as there are no substitutes.
- Perfectly inelastic demand as there is no options.
- Barrier to entry & exit.
- Price makers & price setters.
- Price discrimination the main features.
- Unique product.
- Size of market is large.
- Faces tradeoff between output & prices (at one time take decisions on output or price)
- Regulated by government.
- Demand is inelastic very low ie steeper.
- Price discrimination or discriminating monopoly.

#### Conditions for price discriminations are as follows:-

- I. There should be no contact between two markets
- II. Elasticity of demand in different markets should be different
- III. Market must be imperfect
- IV. No possibility of resale
  - Price discrimination is profitable when the price elasticity of demand is different in different market.
  - Price discrimination in which a monopolist by selling a product at two different prices pocket a part of consumer surplus Pigou calls it third degree price discrimination.
  - Dumping- when a monopolist is charging a higher price in the home market and a lower price in the international market.
  - C. Pigou has told that price discrimination is the ultimate aim of monopolist to earn maximum profit.
  - In short run it earns normal profit, abnormal profit and in rare almost nil in case of loss.
  - In long run it earns normal profit but tries to be in abnormal profit as always
  - Multiplant monopoly is a more realistic situation where a monopolist produces in two or more plants and each plant having different cost structure.
  - Price discrimination- It is the practice of charging different prices from different consumer for the same goods or services at the same time. It is also called discriminating monopoly, selective pricing by market segmentation, charging what the traffic will bear.

### MONOPOLIST COMPETITION:

Monopolistic competition implies that market situation where there are many sellers, but there is a product differentiation between each seller. The individual decisions about pricing and output are not considered. According to Leftwitch, "Monopolistic competition is a market situation in which there are many sellers of a particular product but the product of each seller is in some way differentiated in the minds of consumers from the product of every other seller."

### POINTS TO REMEMBER

- ⊕ When such monopolist producers are competing amongst themselves it is called monopolistic competition.
- ⊕ It is also known as cut throat competition.
- ⊕ Followers of monopolistic competition are beggar thy neighbour tactics.
- ⊕ Many number of sellers and large number of buyers.
- ⊕ Product differentiation- same old product are sold under a different trade name, style, design & color. Only outward appearance change.
- ⊕ High selling cost & advertisement cost on publicity.
- ⊕ Demand is elastic  $ep>1$
- ⊕ Price difference with different price range.
- ⊕ Own price policy.
- ⊕ Create brand loyalty.
- ⊕ Price war.
- ⊕ Gift articles.
- ⊕ Free entry and exit.
- ⊕ Absence of interdependence- large number of firm are different in their size each firm has its own production and marketing policy so on. Firm is influence by other firms all is independent.

### Two dimensional competitions:

- I. Price competition- firms compete with each other on the basis of price.
  - II. Non price competition- firms compete on the basis of brand product, quality and advertisement.
- ⊕ In short run abnormal profit, normal profit and loss, in long run there is always normal profit.
  - ⊕ Output is much less.
  - ⊕ Inefficient market also survive.

### MONOPSONY:

- ⊕ A monopsony occurs when a firm has market power in employing factors of production (e.g. labour).
- ⊕ A monopsony means there is one buyer and many sellers.
- ⊕ It often refers to a monopsony employer – who has market power in hiring workers.
- ⊕ This is a similar concept to monopoly where there is one seller and many buyers.

### BILATERAL MONOPOLY

> If there is one seller and one buyer then it is called bilateral monopoly.

### OLIGOPOLY:

That form of imperfect competition in which a particular commodity is produced by few firms only whose product are either homogeneous or are close substitute.

### Features of Oligopoly:

- a. Few Seller
- b. Large Buyer
- c. Product may be Homogeneous or Differentiated
- d. Interdependence
- e. Advertisement & Sales Promotion
- f. Rivalry

- g. Difficult to Enter & Exit of Firms
- h. Price Rigidity .....
- i. Demand Curve Uncertain
- j. Price rigidity and price war.

#### **Types of Oligopoly:**

- (i) **Differentiated Oligopoly** : It is refers to that market condition product is differentiated produced by firms.
- (ii) **Pure Oligopoly** : It is refer to that market where there is homogenous product produced by firms.
- (iii) **Collusive Oligopoly** : It refer to that market where there all firms make cartel, to enjoy monopoly power.
- (iv) **Independent oligopoly** : Firm free to produce & decide own price

- + Oligopoly refers to an industry that contains only a few competing firm. Each firm has enough market power to prevent its being a price taker, but each firm is subject to enough inter firm rivalry to prevent it considering the market demand curve as its own.
- + Mutual interdependence means that the firms are significantly affected by each other price & output decisions.
- + They can retain long run abnormal profit as high barrier of entry
- + In oligopoly cross elasticity of demand is very high between the products of the oligopolistic because the products are close substitutes.
- + Advertisement has main role in oligopoly
- + Price rigidity- It means that firms would not like to change the prices. It will stick to price. If a firm tries to reduce the price the rivals will also retaliate by reducing their prices, so it will not be of any advantage to it. Likewise if a firm tries to raise its price, other firms will not do so. As a result the firm will lose its customers and incur loss. So there is a price rigidity in an oligopoly market.
- + Keen competition in oligopoly market, as the number of sellers is so small that any move by one seller immediately affects the rival sellers. As a result each firm keeps a close watch the activities of the rival firms and prepares itself to counter it.
- + Oligopolist is the highest form of competition.
- + Existence of non -profit motive , motives like sales maximization, security maximization, risk minimization.
- + They are price setters and makers

#### **Market Structure & Pricing Decisions**

Price determination is one of the most crucial aspects in economics. Business managers are expected to make perfect decisions based on their knowledge and judgment. Since every economic activity in the market is measured as per price, it is important to know the concepts and theories related to pricing. Pricing discusses the rationale and assumptions behind pricing decisions. It analyzes unique market needs and discusses how business managers reach upon final pricing decisions.

It explains the equilibrium of a firm and is the interaction of the demand faced by the firm and its supply curve. The equilibrium condition differs under perfect competition, monopoly, monopolistic competition, and oligopoly. Time element is of great relevance in the theory of pricing since one of the two determinants of price, namely supply depends on the time allowed to it for adjustment.

#### **Market Structure**

A market is the area where buyers and sellers contact each other and exchange goods and services. Market structure is said to be the characteristics of the market. Market structures are basically the number of firms in the market that produce identical goods and services. Market structure influences the behavior of firms to a great extent. The market structure affects the supply of different commodities in the market.

When the competition is high there is a high supply of commodity as different companies try to dominate the markets and it also creates barriers to entry for the companies that intend to join that market. A monopoly market has the biggest level of barriers to entry while the perfectly competitive market has zero percent level of barriers to entry. Firms are more efficient in a competitive market than in a monopoly structure.

### Perfect Competition

Perfect competition is a situation prevailing in a market in which buyers and sellers are so numerous and well informed that all elements of monopoly are absent and the market price of a commodity is beyond the control of individual buyers and sellers.

With many firms and a homogeneous product under perfect competition no individual firm is in a position to influence the price of the product that means price elasticity of demand for a single firm will be infinite.

### Pricing Decisions

#### Determinants of Price Under Perfect Competition

Market price is determined by the equilibrium between demand and supply in a market period or very short run. The market period is a period in which the maximum that can be supplied is limited by the existing stock. The market period is so short that more cannot be produced in response to increased demand. The firms can sell only what they have already produced. This market period may be an hour, a day or a few days or even a few weeks depending upon the nature of the product.

#### Market Price of a Perishable Commodity

In the case of perishable commodity like fish, the supply is limited by the available quantity on that day. It cannot be stored for the next market period and therefore the whole of it must be sold away on the same day whatever the price may be.

#### Market Price of Non-Perishable and Reproducible Goods

In case of non-perishable but reproducible goods, some of the goods can be preserved or kept back from the market and carried over to the next market period. There will then be two critical price levels.

The first, if price is very high the seller will be prepared to sell the whole stock. The second level is set by a low price at which the seller would not sell any amount in the present market period, but will hold back the whole stock for some better time. The price below which the seller will refuse to sell is called the Reserve Price.

### Monopolistic Competition

Monopolistic competition is a form of market structure in which a large number of independent firms are supplying products that are slightly differentiated from the point of view of buyers. Thus, the products of the competing firms are close but not perfect substitutes because buyers do not regard them as identical. This situation arises when the same commodity is being sold under different brand names, each brand being slightly different from the others.

For example – Lux, Liril, Dove, etc.

Each firm is therefore the sole producer of a particular brand or “product”. It is monopolist as far as a particular brand is concerned. However, since the various brands are close substitutes, a large number of “monopoly” producers of these brands are involved in a keen competition with one another. This type of market structure, where there is competition among a large number of “monopolists” is called monopolistic competition.

In addition to product differentiation, the other three basic characteristics of monopolistic competition are –

There are large number of independent sellers and buyers in the market.

The relative market shares of all sellers are insignificant and more or less equal. That is, seller-concentration in the market is almost non-existent.

There are neither any legal nor any economic barriers against the entry of new firms into the market. New firms are free to enter the market and existing firms are free to leave the market.

In other words, product differentiation is the only characteristic that distinguishes monopolistic competition from perfect competition.

### **Monopoly**

Monopoly is said to exist when one firm is the sole producer or seller of a product which has no close substitutes. According to this definition, there must be a single producer or seller of a product. If there are many producers producing a product, either perfect competition or monopolistic competition will prevail depending upon whether the product is homogeneous or differentiated.

On the other hand, when there are few producers, oligopoly is said to exist. A second condition which is essential for a firm to be called monopolist is that no close substitutes for the product of that firm should be available.

From above it follows that for the monopoly to exist, following things are essential –

One and only one firm produces and sells a particular commodity or a service.

There are no rivals or direct competitors of the firm.

No other seller can enter the market for whatever reasons legal, technical, or economic.

Monopolist is a price maker. He tries to take the best of whatever demand and cost conditions exist without the fear of new firms entering to compete away his profits.

The concept of market power applies to an individual enterprise or to a group of enterprises acting collectively. For the individual firm, it expresses the extent to which the firm has discretion over the price that it charges. The baseline of zero market power is set by the individual firm that produces and sells a homogeneous product alongside many other similar firms that all sell the same product.

Since all of the firms sell the identical product, the individual sellers are not distinctive. Buyers care solely about finding the seller with the lowest price.

In this context of “perfect competition”, all firms sell at an identical price that is equal to their marginal costs and no individual firm possess any market power. If any firm were to raise its price slightly above the market-determined price, it would lose all of its customers and if a firm were to reduce its price slightly below the market price, it would be swamped with customers who switch from the other firms.

Accordingly, the standard definition for market power is to define it as the divergence between price and marginal cost, expressed relative to price. In Mathematical terms we may define it as –

$$L =$$

$$(P - MC)$$

$$P$$

### **Oligopoly**

In an oligopolistic market there are small number of firms so that sellers are conscious of their interdependence. The competition is not perfect, yet the rivalry among firms is high. Given that there are large number of possible reactions of competitors, the behavior of firms may assume various forms. Thus there are various models of oligopolistic behavior, each based on different reactions patterns of rivals.

Oligopoly is a situation in which only a few firms are competing in the market for a particular commodity. The distinguishing characteristics of oligopoly are such that neither the theory of monopolistic competition nor the theory of monopoly can explain the behavior of an oligopolistic firm.

**Two of the main characteristics of Oligopoly are briefly explained below –**

Under oligopoly the number of competing firms being small, each firm controls an important proportion of the total supply. Consequently, the effect of a change in the price or output of one firm upon the sales of its rival firms is noticeable and not insignificant. When any firm takes an action its rivals will in all probability react to it. The behavior of oligopolistic firms is interdependent and not independent or atomistic as is the case under perfect or monopolistic competition.

Under oligopoly new entry is difficult. It is neither free nor barred. Hence the condition of entry becomes an important factor determining the price or output decisions of oligopolistic firms and preventing or limiting entry of an important objective.

For Example – Aircraft manufacturing, in some countries: wireless communication, media, and banking.

### PRICING STRATEGIES

- 1) **Full cost or cost plus pricing-** The price is set to cover the cost of material, labor, overheads and a certain percentage of profit cost to be included are actual cost, expected cost and standard cost.
- 2) **Going rate pricing-** The going rate pricing emphasize the market conditions where a price leader exists and he charges a price keeping with what the followers are charging.
- 3) **Marginal cost pricing-** The marginal cost pricing appears to suggest that the price charged should be equal to the marginal cost. A firm can set a price that ensures the targeted or possible level of profitability also called incremental cost pricing. It refers to the change in total revenue following a unit change in total revenue following a unit change in output.
- 4) **Intuitive pricing-** It is a response or reaction to feel the market.
- 5) **Experimental pricing-** In search of an optimum price, the firm takes some cognizance of the demand for the product and proceeds to fix a price by the trial and error method. Usually a sample of test market is selected and price is varied to see the reactions. These reactions are observed and then a price that maximizes the profit is fix, widely used in new products.
- 6) **Imitative pricing-** the firm fixes its price equal to or in the same proportion of the price of another firm
- 7) **Skimming pricing-** A firm can decide to skim the cream of the market by charging a very high price
- 8) **Penetration pricing-** charging a low price to penetrate the market
- 9) **Cyclical pricing-** firm may decide to respond to these fluctuations by reducing off season prices & raising price when conditions are brisk.
- 10) **Refusal pricing-** surgical equipment is example of this type. No price reduction is possible so at less than this the seller just refuses to supply the product.
- 11) **Psychological or double pricing-** on the price tag two prices are printed and the higher one is crossed. The consumer get the feeling that the price is lowered by the company & therefore sales get boost.
- 12) **Prestige pricing-** a high price is maintained where buyers attach prestige considerations to the product.
- 13) **Customary pricing-** it is charged in kinked demand curve.

**Some important points-**

- ❖ Cournot Duopoly Model- 1838
- ❖ Bernard Duopoly Model- 1880
- ❖ Edge Worth Duopoly Model- 1897
- ❖ Stackel Duopoly Model- 1933
- ❖ Chamberlin Duopoly Model- 1934
- ❖ Sweezy Duopoly Model- 1939

- ❖ Neumann Morgenstern Game Theory Model- 1944
- ❖ Baumaul Duopoly Model- 1959
- ❖ Father Of Economics- Adam Smith
- ❖ Originator Of Law Of Demand- Alfred Marshall
- ❖ Revealed Preference Theory- Paul Samuelsson
- ❖ Cardinal Utility/ Neo Classical Approach- Alfred Marshall
- ❖ Ordinal utility/ indifference curve- F Y edge worth, vilfredo Pareto, EE Slutsky, J R Hicks and RGD Allen.
- ❖ Indifference curve analysis is also known as iso utility curve or equal utility curve and for producer it is iso quant curve.
- ❖ Budget Line is also called Price Line, Consumption Possibility Line And Iso Cost Line.
- ❖ Consumer equilibrium is said when there is a tangency between the budget line and the indifference curve.
- ❖ Price discrimination- A C Pigou.
- ❖ Free entry & exit/ factor mobility concept- Adam Smith.
- ❖ Exception of Law Of Demand- Beham
- ❖ Perfect competition is known as Myth.
- ❖ Imperfect competition- John Robinson.
- ❖ Kinked Demand Curve- Paul Sweezy In 1939.
- ❖ Consumer & Producer Surplus- Alfred Marshall
- ❖ Material requisites well-being- A C pigou
- ❖ Positive impact of monopoly- Joseph Schumpeter.
- ❖ Wealth of nations- Adam Smith.
- ❖ Composite demand- the demand of commodities or goods that provides multiple uses.
- ❖ Demand- willingness to purchase+ ability to pay
- ❖ Substitute goods like tea and coffee
- ❖ Complementary goods is also known as jointly demand goods. Such as car petrol.

### **Factor Pricing: Concept and Theories**

Factors of production can be defined as inputs used for producing goods or services with the aim to make economic profit.

In economics, there are four main factors of production, namely land, labor, capital, and enterprise. The price that an entrepreneur pays for availing the services of these factors is called factor pricing.

An entrepreneur pays rent, wages, interest, and profit for availing the services of land, labor, capital, and enterprise respectively. The theory of factor pricing deals with the price determination of different factors of production.

The determination of factor prices is always assumed to be similar to the determination of product prices. This is because in both the cases, the prices are determined with the help of demand and supply forces. Moreover, the demand for factors of production is similar to the demand for products.

However, there are two main differences on the supply side of factors of production and products. Firstly, in product market, the supply of a product is determined by its marginal cost of production. On the other hand, in factor market, it is not possible to determine the supply of factors on the basis of marginal cost.

For example, it is difficult to ascertain the exact cost of production for factors, such as land and capital. Secondly, the supply of factors of production cannot be readily adjusted as in the case of products. For instance, if the demand for a land increases, then it is not possible to increase its supply immediately.

#### **Concept of Factor Pricing:**

Factor pricing is associated with the prices that an entrepreneur pays to avail the services rendered by the factors of production. For example, an entrepreneur needs to pay wages to labor, rents for availing land, and interests for capital so that he/she can earn maximum profit. These factors of production directly affect the production process of an organization.

In context of an economy, these four factors of production when combined together produce a net aggregate of products, which is termed as national income. Therefore, it is important to determine the prices of these four factors of production. The theory of factor pricing deals with the determination of the share prices of four factors of production, namely land, labor, capital and enterprise.

In other words, the theory of factor pricing is concerned with the principles according to which the price of each factor of production is determined and distributed. Therefore, the theory of factor pricing is also known as theory of distribution. According to Chapman, the theory of distribution, "accounts for the sharing of the wealth produced by a community among the agents, or the owners of the agents, which have been active in its production."

**There are two aspects of each factor of production, which are as follows:**

**i. Price Aspect:**

Refers to the aspect in which an organization pays a certain amount to avail the services of factors of production. For example, wages, rents, and interests constitute the price of factors of production.

**ii. Income Aspect:**

Refers to another aspect in which a certain amount is received by a factor of production. For instance, rents received by a landlord and wages received by labor constitute the income generated from the factors of production.

Generally, it is assumed that factor pricing theory is similar to product pricing theory. However, there are certain differences between the two theories. Both the theories assume the determination of prices by the interaction of two market forces, namely demand and supply.

However, there are differences in the nature of demand and supply of factors of production with respect to that of products. The demand for factors of production is derived demand, while demand for products is direct demand. Moreover, the demand for the factors of production is joint demand.

This is because a product cannot be produced using a single factor of production. On the other hand, the supply of products is closely related with the cost of production, whereas there is no cost of production for factors. For example, there is no cost of production for land, labor, and capital. Therefore, the factor pricing is separated from product pricing.

**Theories of Factor Pricing:**

The theory of factor pricing is concerned with the principles according to which the price of each factor of production is determined and distributed. The distribution of factors of production can be of two types, namely personal and functional. Personal distribution is concerned with the distribution of income among different individuals.

It is associated with the amount of income generated not with the source of income. For example, an individual earns Rs. 20,000 per month; this income can be earned by him/her by wages, rents, or dividends. On the other hand, functional distribution is associated with the distribution of income among different factors of production as per their functions.

It is concerned with the source of income, such as wages, rents, interests, and profits. In regard of distribution of factors of production, there are two theories, namely marginal productivity theory and modern theory of factor pricing.

**Why a Separate Theory of Factor Pricing?**

It is often pointed out that the price of a factor of production is determined, like the price of a commodity, by the equilibrium of forces of demand and supply. If the demand of the particular factor rises, other things remaining the same, its price goes up and vice versa. The other economists who differ with this view are of the opinion that the theory of value is not applicable in its entirety to the pricing of factor of production. They believe that on the side of demand there is similarity between the two, because the value of a particular commodity and the price of a

factor of production are governed by marginal utility and marginal productivity respectively. But on the side of supply, much difference exists between them. On the side of supply, the price of a particular commodity is determined by its marginal cost of production. But in case of labor or an acre of land or a unit capital, it is not possible to ascertain exactly its costs of production. The other dissimilarity between the two is that the supply of a factor of production cannot be readily adjusted as we can do in the case of a commodity. For example, if the demand of a particular type of labor increases or the rent of land rises-up, it will not be possible to increase their supply immediately.

#### **In the words of Marshall:**

"Free human beings are not brought up to their work on the same principle of a machine, a house of a slave. If they were, there would be very little difference between the distribution and the exchange side of value".

Thus, we come to the conclusion that though the value of the commodities and the prices of the factors of production are determined by demand and supply yet, due to some differences of the factors of production on the side of supply, there is a need for a separate theory of distribution.

#### **Meaning of General Equilibrium Analysis:**

As against partial equilibrium analysis, general equilibrium analysis is concerned with economic system as a whole.

It recognises the fact that economic system is a network in which all the parts are mutually dependent on one another and in mutual interaction with one another.

Goods are either competitive or substitutes. Some goods are used in the manufacture of other goods. Factors of production are complementary to each other to the extent they can be substituted for each other, they are competitive also. Resources also face competitive demand from producers.

Therefore, change in the demand or supply of any commodity or factor of production sets in motion a chain reaction. A disturbance in one sector of the economy produces its repercussions on all sides. General equilibrium analysis is concerned with the overall effects of a disturbance.

Instead of taking only a few variables at a time, we take into consideration all the relevant variables which may affect the particular phenomenon in hand. In this type of analysis, all the side-affects of an economic disturbance are analysed in full.

An example will make the concept of general equilibrium clearer. Suppose the demand for India-manufactured consumer goods suddenly increases in Western Europe. Indian exports will increase thereby increasing output, employment and profits in the export industries. Resources will be diverted from other industries to the export industries.

The demand and prices of the substitute commodities will also increase. The increased demand for exports will have economy-wide effects. An all-round analysis of the repercussions of the economic disturbance increased demand for manufactured consumer goods for export can be done only through general equilibrium theory.

General equilibrium analysis deals with the equilibrium of the whole organisation in the economy consumers, producers, resource-owners, firms and industries. Not only should individual consumers and firms be in equilibrium in themselves but also in relation to each other.

Business firms enter product markets as suppliers, but they enter factor markets as buyers. Households, on the other hand, are buyers in product markets but suppliers in factor markets. General equilibrium prevails when both the product and factor markets are in equilibrium in relation to each other.

#### **Objectives of General Equilibrium Analysis:**

General equilibrium analysis serves many important purposes.

Firstly, it provides us with a theoretical tool to understand the economy in its entirety the mechanics of its working, its structure, and the major forces making it work. The theory is analysis of the interrelationships of the various

sectors of an economy. As such, it helps us in knowing clearly the economy-wide implications of an economic change.

Secondly, we can apply general equilibrium theory to determine the primary, secondary and tertiary effects of an economic disturbance which has an intersectoral impact. Whenever there is an economic disturbance say, like the defence programmes in the wake of Chinese aggression in 1962 it has some immediate effects in one sector of the economy.

Gradually, the impact of such a disturbance is felt in other sectors. The whole economy goes into disequilibrium. Process of adjustment to the economic disturbances starts to establish a new equilibrium.

As **Richard Leftwich** put it, "First comes the big splash from the disturbance. Particular equilibrium analysis handles the splash. But waves and then ripples are set up from it, affecting one another and affecting the area of the splash. The ripples run farther and farther, becoming smaller and smaller, until eventually they dwindle away. The tools of general equilibrium are required for analysis of the entire series of readjustments."

Thus, general equilibrium theory is of great value in stressing the interdependence of various parts of the economic system, which is easily lost sight of in the use of partial equilibrium theory in micro-economic analysis.

Failure to recognise this interdependence is responsible for many errors in popular reasoning on economic policy.

#### **Uses of General Equilibrium Analysis:**

The practical importance of general equilibrium analysis cannot be questioned.

#### **Recently, it has proved extremely useful in different forms:**

1. The general equilibrium theory is being put to extensive use in the study of the development and other major programmes of modern economics to ascertain their feasibility, their impact and requirements. Take, for example, the effect of defence preparations to meet the Chinese threat.

It meant a rearrangement of all the priorities. There was heavier demand for steel and other construction materials, as also the demand for woolens.

It also meant heavier imports. Prices of all these commodities increased, diverting resources to these industries and away from some others. Eventually, effects were felt over the entire economy. An assessment of the full impact of such a programme in advance could be possible only through general equilibrium analysis.

2. Professor Wassily Leontief accomplished the task of bringing general equilibrium theory to the practical level by building his input-output analysis. The use of computers and other high speed calculating machines has made it possible for us to solve hundreds of equations to find out a solution.

Thus, input-output analysis has been put to a variety of uses. Since this analysis can throw light on the structure of an economy and the interdependence between its different parts, it has been extensively used in planning for smooth growth of the national and international economy.

3. General equilibrium analysis has found its most extensive use in welfare economics. In this branch of economics, we study the 'best' allocation of resources, given the objectives of society. The search for such an organization of the economy leads us to apply the methods of general equilibrium.

4. Monetary theory and policy have been revolutionised by the introduction of general equilibrium analysis. It is now widely recognized that a meaningful monetary policy must apply to all the assets in the economy which are related to all the goods, capital and labour markets. Such a monetary policy is nothing but a study of general equilibrium effects of government policy.

#### **Interdependence in the Economy:**

In our dealings with the problems of microeconomic theory we mostly make use of a partial equilibrium approach. In such an approach, we concentrate on decision-making in a particular segment of the economy in isolation of the happenings in the other segments, under the *ceteris paribus* assumption.

For example, we study the decision-making of a firm in respect of the production of its output and simplify our analysis by assuming that the prices of the factors and products and the state of the technology are given.

Also, product markets, where buyers and sellers interact with each other and among them-selves with regard to the prices and the output levels of various commodities, are studied on the basis of the *ceteris paribus* assumption, and here the relationships between the markets are ignored.

Similarly, demand, supply and price determination in the factor markets are studied on the basis of the *ceteris paribus* assumption, and here also the relationships between the different factor markets are ignored. That is, each product and factor market is discussed along the line of the Marshallian partial equilibrium approach and independently of each other.

However, actually, the markets for all commodities and all productive factors are interrelated, and the prices in all markets are simultaneously determined. For example, demand for various goods and services depend on the consumers' tastes and preferences and incomes.

Consumers' incomes in turn depend on the amount of resources they own and on the factor prices. Factor prices depend on the demand and supply of the various factors. The demand for factors by the firms depends not only on the state of technology but also on the demand for final goods they produce. The demand for the final goods depends on consumers' income.

In fact, an economic system consists of millions of economic decision-making units who are motivated by self-interest. Each one pursues his own goal and strives for his own equilibrium independently of the others. In traditional economic theory, the goal of the decision-maker is to maximise (or sometimes minimise) something.

The consumer maximises satisfaction subject to the budget constraint, the firm maximises profit subject to the technological constraints, or the production function. A worker determines his supply of labour on the basis of maximising his satisfaction from his labour-leisure indifference-preference pattern.

The problem here is to determine whether a general equilibrium can be achieved out of the millions of independent, self-interest motivated economic decision-makers, especially in view of the fact that all economic units, be they consumers, producers, or suppliers of factors, are interdependent.

General equilibrium theory tries to ascertain whether independent action by each decision-maker leads to a position in which equilibrium is attained by all. A general equilibrium is defined as a state in which all markets and all decision-making units are simultaneously in equilibrium.

That is, a general equilibrium exists if each market is cleared at a positive price, with each consumer maximising his satisfaction and each firm maximising profit.

The examination of how a state of general equilibrium can, if ever, be reached, i.e., how prices are determined simultaneously in all markets, so that there is neither excess demand nor excess supply, while, at the same time, the individual economic units attain their own goals, falls within the scope of the general equilibrium analysis.

The most ambitious general equilibrium model was developed by the French economist Leon Walras (1834-1910). But in the Walrasian system, [since one of the equations has been found to be redundant], the number of independent equations has been one less than the number of unknowns. That is why the absolute level of prices cannot be determined in this model.

General equilibrium theorists have tackled the problem by choosing arbitrarily the price of one commodity as a numeraire (or unit of account) and expressing all other prices in terms of the price of the numeraire. With this device, prices are determined only as ratios—each price is obtained relative to the price of the numeraire.

This indeterminacy can be eliminated by introducing explicitly in the model a money market, in which money is not only the numeraire, but also a medium of exchange and store of wealth.

But even if there is equality between the number of independent equations and the number of unknowns, there is no guarantee that a general equilibrium solution exists. However, some economists—Arrow, Debreu and Hahn, for example have provided general equilibrium solutions under conditional circumstances.

#### A Graphical Treatment of a Simple General Equilibrium Model:

We shall show here graphically the general equilibrium, of a simple economy where there are only two factors of production ( $X_1$  and  $X_2$ ), two-commodities ( $Q_1$  and  $Q_2$ ) and two consumers (I and II). This is known as the  $2 \times 2 \times 2$  general equilibrium model.

Throughout this analysis we shall assume the existence of perfect competition, since it has been proved that a general equilibrium solution exists under free competition (given some additional assumptions about the form of the production and demand functions).

Furthermore, we shall deal only with the static properties of general equilibrium, and we shall not discuss here the dynamic process of reaching the state of such an equilibrium.

#### The Assumptions of the $2 \times 2 \times 2$ Model:

(i) There are two factors of production  $X_1$  and  $X_2$ .

These factors are homogeneous and perfectly divisible. In the model, the quantities of these factors are exogenously given.

(ii) Only two commodities  $Q_1$  and  $Q_2$  are produced. Technology is given, i.e., the production functions remain unchanged in our analysis.

(iii) There are two consumers, I and II, in the economy. They have definite ordinal preference- indifference pattern in respect of consumption of the two goods. All sorts of external effects are absent as also advertising and like activities.

(iv) The goal of each consumer is the maximisation of his own satisfaction subject to his income constraints.

(v) The goal of each firm is profit maximisation, subject to the technological constraint of the production function.

(vi) The factors of production are owned by the consumers.

(vii) The factors of production are fully employed, and all incomes received by their owners (i.e., consumers I and II) are spent.

(viii) There is perfect competition in the commodity and factor markets.

In this model, a general equilibrium is reached when (a) the four markets (two commodity markets and two factor markets) are cleared at a set of equilibrium prices, viz.,  $p_1$ ,  $p_2$  and  $r_1$ ,  $r_2$ , and (b) each participant economic agent (two consumers and two firms) is simultaneously in equilibrium.

#### Therefore, the solution would give us the values of the following variables:

(i) The total quantities,  $q_1$  and  $q_2$ , of the two commodities,  $Q_1$  and  $Q_2$ , which will be produced by firms and bought by consumers.

(ii) The allocation of the given quantities,  $x_{01}$  and  $x_{02}$ , of the two factors to the production of each commodity, i.e., the values of  $x_{11}$ ,  $x_{12}$  and  $x_{21}$ ,  $x_{22}$ . Here  $x_{1i}$  is the quantity of  $X_1$  used to produce the  $i$ th commodity and  $x_{2i}$  is the quantity of  $X_2$  used to produce the  $i$ th commodity.

(iii) The prices of commodities ( $p_1$  and  $p_2$ ) and of the factors of production ( $r_1$  and  $r_2$ ).

(iv) The distribution of factor ownership between the two consumers, i.e., the values of  $x_{11}$ ,  $x_{12}$  and  $x_{111}$ ,  $x_{112}$ .

The quantities of factors owned by each individual multiplied by their prices define their income distribution and, hence, their budget constraint.

#### **Static Properties of a General Equilibrium State:**

There are three static properties of a general equilibrium solution, reached with a free competitive market mechanism. These are:

- (a) Efficient allocation of resources among firms (equilibrium of production).
- (b) Efficient distribution of the commodities produced between the two consumers (equilibrium of consumption).
- (c) Efficient combination of products (simultaneous equilibrium of production and consumption).

The conditions that have to be satisfied for achieving these efficiencies are known as the marginal conditions for Pareto optimality or Pareto efficiency.

#### **General Equilibrium of the Production Sector and the Consumption Sector (Under Perfect Competition):**

Pareto efficiency in production has given us that the general equilibrium of production occurs at a point where the MRTS between the inputs is the same for all the firms, and this condition is automatically satisfied under perfect competition in the factor markets.

Similarly, Pareto efficiency in exchange (consumption) gives us that the general equilibrium of exchange occurs at a point where the MRS between the goods Q1 and Q2 is the same for all the consumers. This condition is also automatically satisfied under perfect competition in the product markets.

Lastly, Pareto efficiency in product-mix ensures the simultaneous equilibrium of production and consumption and this equilibrium occurs when MRPT of Q2 into Q1 becomes equal to MRS of Q1 for Q2 of each consumer. This equilibrium is guaranteed when there is perfect competition in the factor and product markets.

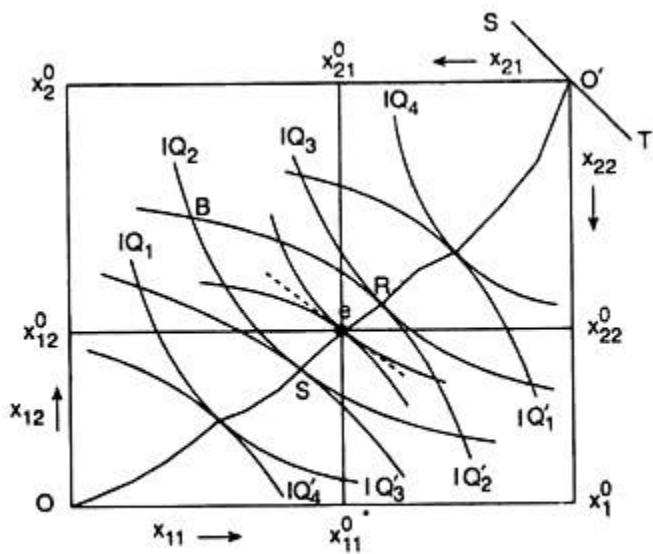
We may now briefly describe the steps through which the general equilibrium of the production sector and the consumption sector is established following the principles of Pareto efficiency, provided there is perfect competition in the factor and product markets.

##### **Step I.**

Construction of the Edge-worth contract curve for production (CCP) on the basis of the given state of technology, production functions and isoquants (IQs), and the given quantities,  $x_01$  and  $x_02$ , of the two inputs,  $X_1$  and  $X_2$ .

##### **Step II.**

Selection of the point on the CCP, like e in Fig. 21.1, where the numerical slopes of the IQs for the two goods become equal to the numerical slope,  $r_1/r_2$ , of the line ST.

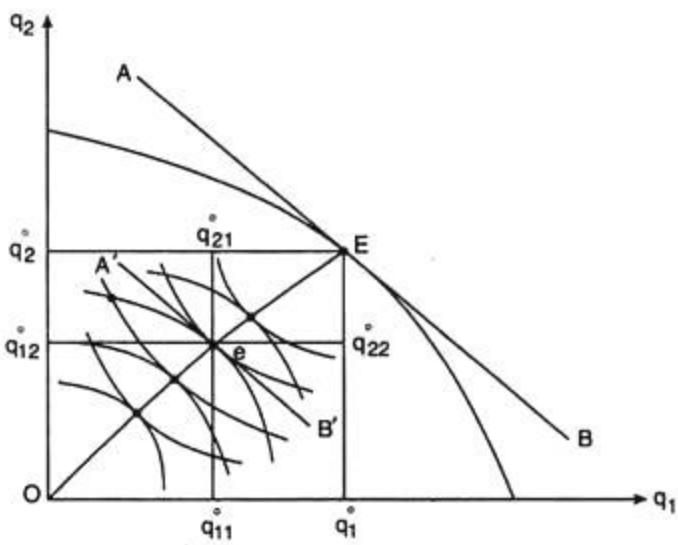


**Fig. 21.1** Edgeworth contract curve for production

At the point e, the efficiency condition (21.1) for production has been satisfied, and, at this point, we obtain the quantities  $x_{011}, x_{012}$  of the two inputs to be used in the production of Q1 and,  $x_{021}, x_{022}$  the production of Q2. Also if these input quantities are substituted in the respective production functions, we obtain the output quantities  $q_{01}$  and  $q_{02}$  represented by the IQs at the point e.

### Step III.

Construction of the production possibility curve or frontier (PPC or PPF) of the economy by means of the mapping of the  $(q_1, q_2)$  combinations implicitly obtained at the points on the CCP, in the commodity space of Fig. 21.5.



**Fig. 21.5** Production sector's plans are consistent with the household sector's plans

Each  $(q_1, q_2)$  point on the PPC being a  $(q_1, q_2)$  combination on the Edgeworth CCP, satisfies the condition:

$$MRTS_{X_1, X_2}^{Q_1} = MRTS_{X_1, X_2}^{Q_2} \quad [\text{eq. (21.7)}]$$

Now, under perfect competition, we have

$$\begin{aligned} MRTS_{X_1, X_2} &= \frac{r_1}{r_2} = \frac{VMP_1}{VMP_2} \left[ \begin{array}{l} \text{since, under competition, profit - maximisation} \\ \text{requires: } VMP_1 = r_1 \text{ and } VMP_2 = r_2 \end{array} \right] \\ &\text{in the production of each good} \end{aligned}$$

$$\Rightarrow \frac{r_1}{r_2} = \frac{P_1 \times MP_1}{P_2 \times MP_2}$$

$$\Rightarrow \frac{r_1}{r_2} = \frac{P_1}{P_2} \frac{\frac{r_1}{MC_1}}{\frac{r_2}{MC_2}}$$

$$\Rightarrow \frac{r_1}{r_2} = \frac{r_1}{r_2} \frac{P_1}{P_2} \frac{MC_2}{MC_1}$$

$$\Rightarrow 1 = \frac{P_1}{P_2} \frac{MC_2}{MC_1}$$

$$\Rightarrow \frac{MC_1}{MC_2} = \frac{P_1}{P_2} \quad [\text{eqn (21.26)}]$$

$$\Rightarrow MRPT_{Q_2 \text{ into } Q_1} = \frac{P_1}{P_2} \quad [\text{eqn (21.26)}]$$

#### Step IV.

Finding out the equilibrium point for Pareto-efficient product mix ( $q_{01}, q_{02}$ ). This is given by the point of tangency E between the PPC and the line AB in Fig. 21.5, with numerical slope =  $p_1/p_2$ . At the point E, conditions (21.27) and (21.28) are satisfied.

#### Step V.

Selection of the point e on the Edgeworth contract curve of exchange (CCE) in Fig. 21.5 which has been constructed with  $q_1$  and  $q_2$  as dimensions of the box diagram.

At point e, the numerical slope of the PPC ( $= p_1/p_2$ ) has been equal to the numerical slopes of the ICs, and so we have:

Fig. 21.1 gives us the allocation of resources at the point of general equilibrium. Of the given quantity  $x_{01}$  of the input  $X_1$ ,  $x_{011}$ , would be allocated to the production of the commodity  $Q_1$  and  $x_{021}$  would be allocated to the production of  $Q_2$  ( $x_{011} + x_{021} = x_{01}$ ). Similarly, of the given quantity  $x_{02}$  of the input  $X_2$ ,  $x_{022}$  would be allocated to the production of  $Q_1$  and  $x_{012}$  would be used in the production of  $Q_2$  ( $x_{012} + x_{022} = x_{02}$ ).

#### Prices of Commodities and Factors:

We have yet to analyse the determination of the prices in the general equilibrium model. In our simple  $2 \times 2 \times 2$  model, there are four prices to be determined. These are the prices,  $p_1$  and  $p_2$ , of the two commodities, and the prices,  $r_1$  and  $r_2$ , of the two factors. However, given the assumptions of the simple model, we have three independent relations, i.e., we would have one equation less.

First, profit-maximisation by the individual firms implies least-cost production of the outputs and the conditions for this are:

$$\text{i.e., } MRTS_{X_1, X_2}^{Q_1} = \frac{r_1}{r_2} = MRTS_{X_1, X_2}^{Q_2} \quad [(21.29)]$$

Second, in the perfectly competitive product and factor markets, a firm employs that quantity of an input, say,  $X_1$ , at which the value of marginal product of the input ( $VMP_{X_1}$ ) becomes equal to its price. Therefore, we have

$$r_1 = MP_1^{Q_1} p_1 = MP_1^{Q_2} p_2 \quad (21.30)$$

$$r_2 = MP_2^{Q_1} p_1 = MP_2^{Q_2} p_2 \quad (21.31)$$

Lastly, utility-maximisation by the individual consumers implies the equality between  $MRS_{Q_1, Q_2}$  and the ratio of the prices of  $Q_1$  and  $Q_2$ . Therefore, we have

$$MRS_{Q_1, Q_2}^I = \frac{p_1}{p_2} \text{ and } MRS_{Q_1, Q_2}^{II} = \frac{p_1}{p_2}$$

$$\text{i.e., } \frac{p_1}{p_2} = MRS_{Q_1, Q_2}^I = MRS_{Q_1, Q_2}^{II} = MRS_{Q_1, Q_2}^{(\text{in general})} \quad (21.32)$$

We have obtained, therefore, four equations in four prices, viz., equations (21.29)–(21.32). But one of them is not independent, for dividing (21.30) by (21.31), we obtain

$$\frac{r_1}{r_2} = \frac{MP_1^{Q_1}}{MP_2^{Q_1}} = MRTS_{X_1, X_2}^{Q_1} \text{ and}$$

$$\frac{r_1}{r_2} = \frac{MP_1^{Q_2}}{MP_2^{Q_2}} = MRTS_{X_1, X_2}^{Q_2}$$

$$\text{i.e., } \frac{r_1}{r_2} = MRTS_{X_1, X_2}^{Q_1} = MRTS_{X_1, X_2}^{Q_2} = MRTS_{X_1, X_2}^{(\text{in general})} \quad (21.32a)$$

Since (21.32a) is the same as (21.29), we have here three independent equations in four unknowns. Therefore, the absolute values of  $r_1$ ,  $r_2$ ,  $p_1$  and  $p_2$  cannot be uniquely determined although the general equilibrium solution is unique.

Here what we can do is to express the three of the prices in terms of the fourth one, i.e., the fourth price may be taken as a numeraire. For example, let us accept  $p_1$  as a numeraire and express the other three prices in terms of  $p_1$ .

**We may do the working as follows:**

From (21.30)–(21.32), we have:

$$\begin{aligned}
 r_1 &= r_2 MRTS_{X_1, X_2} \\
 r_2 &= MP_2^{Q_1} p_1 \\
 \text{Therefore, } r_1 &= MRTS_{X_1, X_2} \cdot MP_2^{Q_1} p_1 \\
 \text{Again, } p_2 &= MRS_{Q_2, Q_1} p_1 \left[ \because MRS_{Q_1, Q_1} = \frac{1}{MRS_{Q_2, Q_1}} \right]
 \end{aligned} \tag{21.33}$$

The above equations give us the relative prices of  $X_1$ ,  $X_2$  and  $Q_2$  in terms of the numeraire  $p_1$ :

$$\begin{aligned}
 \frac{p_2}{p_1} &= MRS_{Q_2, Q_1} \\
 \frac{r_1}{p_1} &= MRTS_{X_1, X_2} MP_2^{Q_1} \\
 \frac{r_2}{p_1} &= MP_2^{Q_1}
 \end{aligned} \tag{21.34}$$

Since the terms on the right hand side of the equations (21.34) are known values which are determined by the general equilibrium solution and the maximising behaviour of the producers and consumers with a given state of technology and given tastes, we have been able to determine the relative prices on their left hand sides.

It may be noted that any good can serve as a numeraire and a change in numeraire would leave the relative prices unaffected. Here the prices are determined as relative prices or as a ratio, because money has not been introduced in the system as a commodity for transactions or as a store of wealth.

The general equilibrium model can be completed by adding one more monetary equation. Then the absolute values of the four prices can be determined in terms of money.

#### Factor Ownership and Income Distribution:

For the general equilibrium of production and consumption, consumers must earn appropriate incomes so that they may be able to buy the quantities of the two commodities, viz.,  $q_{011}$ ,  $q_{012}$ ,  $q_{021}$  and  $q_{022}$ , implied at the point e of Fig. 21.5.

Consumers' income depends on the distribution of factor ownership, i.e., the quantities of the factors which they own, and on factor prices. We have already seen that the prices of the factors are determined only as a ratio.

This, however, is adequate for the required income distribution, if the ownership of the factors by consumers I and II is determined. For this purpose, we require four independent relations, given that we have four unknowns, i.e.,  $x_{11}$ ,  $x_{12}$ ,  $x_{21}$  and  $x_{22}$ —these are the factor quantities owned by the two individuals (viz., I and II).

Since the constant returns to scale has been assumed in the model, we can make use of the product exhaustion theorem which gives us that if the inputs are paid at the rate of their respective marginal products (i.e., VMPs), the total factor income would be equal to the total value of the product of the economy, i.e., we would have:

$$p_1 q_1^0 + p_2 q_2^0 = r_1 x_1^0 + r_2 x_2^0 \quad (21.35)$$

(value of total output) = (total factor income)

By assumption, the income of each consumer is all spent, so that we have

$$r_1 x_1^I + r_2 x_2^I = p_1 q_{11}^0 + p_2 q_{12}^0 \quad (21.36)$$

$$r_1 x_1^{II} + r_2 x_2^{II} = p_1 q_{21}^0 + p_2 q_{22}^0 \quad (21.37)$$

Finally, by the assumption of full employment, we have

$$x_1^I + x_1^{II} = x_1^0 \quad (21.38)$$

$$x_2^I + x_2^{II} = x_2^0 \quad (21.39)$$

The above five equations, (21.35)–(21.39) give only three independent relations, viz., (21.35), (21.38) and (21.39), because (21.36) and (21.37) are implied by the product exhaustion theorem (21.35):

$$\begin{aligned} r_1(x_1^I + x_1^{II}) + r_2(x_2^I + x_2^{II}) &= p_1(q_{11}^0 + q_{21}^0) + p_2(q_{12}^0 + q_{22}^0) \\ \Rightarrow r_1 x_1^0 + r_2 x_2^0 &= p_1 q_1^0 + p_2 q_2^0 \quad [(21.35)] \end{aligned}$$

Thus, here we have three independent equations in four unknowns, whose values, therefore, cannot be uniquely determined. This indeterminacy can be solved partially if we fix up the value of one of the four factor endowments and then determine the remaining three so that the incomes of the consumers would become compatible with their consumption pattern as given at the point e in Fig. 21.5.

It may be noted that the model discussed above assumes that the fixed amounts of the inputs  $X_1$  and  $X_2$  are given. The factor supplies do not depend on the prices of the factors and commodities.

The model could be solved simultaneously for the allocation of inputs, total output-mix and the distribution of commodities, and then only we could superimpose on this solution the ownership of the factors and money income distribution problem.

At the end of this analysis of the simple general equilibrium model, we may conclude that although the model has various shortcomings, it is the most complete existing model of economic behaviour. The students of the subject become aware of the tremendous complexity of the real world as they go through the vast system of mutually interdependent markets.

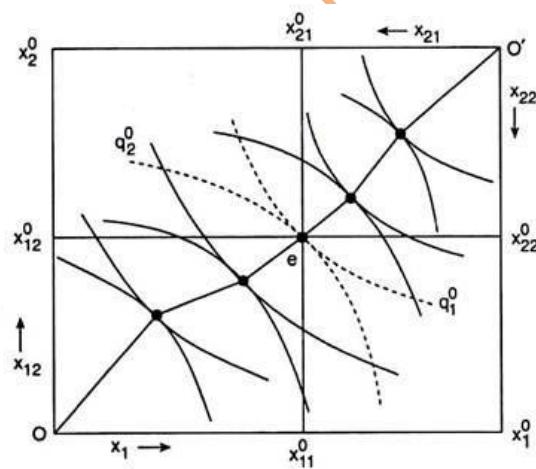


Fig. 21.6 Allocation of resources in general equilibrium

#### General Equilibrium and the Allocation of Resources:

The PPC is the locus of points of the Edge-worth contract curve of production (CCP) mapped on the production space [i.e.,  $(q_1, q_2)$  space], i.e., there is a one-to-one correspondence between the points on the CCP and those on the FPC.

Therefore, we would have a point, say, e in Fig. 21.6 on the CCP corresponding to the point E on the PPC in Fig. 21.5. The production quantities at both E and e are the same, being  $q_{01}$  and  $q_{02}$ . The allocation of the given quantities of the factors,  $(x_{011} \text{ and } x_{02})$  over the production of the two goods are  $(x_{011}, x_{012})$  for Q1 and  $(x_{011}, x_{012})$  for Q2.

#### **Introduction to Welfare Economics:**

The literature on welfare economics has grown rapidly in recent years. The utilitarian's were the first to talk of welfare in terms of the formula, 'the greatest happiness of the greatest number'. Vilfredo Pareto considered the question of maximising social welfare on the basis of general optimum conditions.

Marshall and Pigou, the neo-classical economists, concentrated on particular sectors of the economic system in their postulates of welfare economics. It was Professor Robbins' ethical neutrality view about economics that led to the development of welfare economics as an important field of economic studies.

Kaldor, Hicks and Scitovsky have laid the foundations of the New Welfare Economics with the help of the 'compensation principle' avoiding all value judgements. On the other hand, Bargson, Samuelson and others have developed the concept of the Social Welfare Function without sacrificing value judgements.

In the discussion that follows we shall refer to certain basic concepts of welfare economics and then pass on to Pareto's welfare conditions for an understanding of modern welfare economics.

#### **Meaning of Welfare Economics:**

Welfare economics has been defined by Scitovsky as "that part of the general body of economic theory which is concerned primarily with policy." It is thus a "normative" study which is concerned with judgement and prescription. But it does not mean that it is not a "positive" study. It has certain principles and standards on the basis of which the economist can judge and formulate economic policies.

However, it is difficult to set welfare propositions which may be purely positive. In a positive study, as pointed out by J. De V. Graff, "The proof of the pudding is indeed in the eating. The welfare cake, on the other hand, is so hard to taste, that we must sample its ingredients before baking." I. M.D. little is, therefore, right in characterizing welfare economics as a normative study. But all this does not make the meaning of welfare economics clear. For clarity, one must distinguish between general and economic welfare, and individual and social welfare.

General Welfare refers to all economic and non-economic goods and services that provide utilities or satisfaction to individuals living in a community. In this sense, general welfare becomes a very wide, complicated and impracticable notion.

Pigou, therefore, defines economic welfare as that part of general welfare which can "be brought directly or indirectly into relation with the measuring rod of money." In the Pigovian sense, economic welfare implies the satisfaction or utility derived by an individual from the use of economic goods and services or those that can be exchanged for money.

But Dr. Graaf does not agree with Pigou's concept of economic welfare for two reasons.

First, money as a measure of welfare is neither accurate nor satisfactory because value of money changes with variations in the price level.

Second, economic welfare does not depend upon exchangeable goods and services because it is not possible to separate economic factors from non-economic factors, so far as an individual's state of mind is concerned.

In fact, an individual's welfare depends upon both economic and non-economic factors. Since non-economic factors are not capable of assessment, Graaf opines that in welfare theory only economic factors are considered, assuming non-economic factors to be constant.

Robertson while accepting Pigou's distinction between general and economic welfare, prefers to use the world welfare for economic welfare, Boulding, on the other hand, defines economic welfare in terms of the opportunity cost of exchangeable goods and services.

According to Prof. Pigou, an individual's welfare resides in his state of mind or consciousness which is made up of his satisfactions or utilities. But modern economists explain it in terms of a given scale of preferences.

An individual's welfare is said to have increased when he is better off, when he himself believes that his welfare has increased as a hypothesis. But it is not possible to ask every individual whether his welfare has increased or not. Dr. Mishan, therefore, suggests a choice expansion index. Whenever an individual's choice index of hitherto unavailable goods expands his welfare is said to have increased, provided his tastes remain unchanged.

Thus economic welfare implies the welfare of a group or society comprising all individuals. In a way, it is the summation of individual welfares. But unlike an individual, a society has no mind or consciousness. In a society every person thinks and acts differently from others. Therefore, no social choice-expansion index can reflect social welfare. Social welfare thus implies the aggregation of the satisfaction or utilities of all individuals in a society.

#### **Measuring Welfare:**

There are mainly two concepts for measuring welfare. The first relates to a Pareto improvement whereby social welfare increases when society as a whole is better off without making any individual worse off. This proposition also includes the case that when one or more persons are better off, some persons may be neither better off nor worse off.

It is, thus, free from making interpersonal comparisons. Hicks, Kaldor and Scitovsky have explained social welfare in the Paretian sense in terms of 'the compensation principle'. In the second place, social welfare is increased, when the distribution of welfare is better in some sense.

It makes some persons in society better off than others so that the distribution of welfare is more equitable. This is known as distributional improvement and relates to the Bergson social welfare function.

Dr. Graaf, however, refers to another concept which he calls the paternalist concept. A state or a paternalist authority maximises social welfare according to its own notion of welfare without any regard to the views of individuals in society.

Economists do not make use of this concept to measure social welfare because it is related to a dictatorial regime and does not fit in a democratic set-up. Economic welfare, thus, implies social welfare which is concerned primarily with policy that leads either to a Pareto improvement or distributional improvement, or both.

#### **Value Judgments:**

All ethical judgments and statements which perform recommendatory, influential and persuasive functions are value judgements.

According to Dr. Brandt a judgment is a value judgment if it entails or contradicts some judgment which could be formulated so as to involve any one of the following terms in an ordinary sense – 'is a good thing that' or 'is a better thing that'; 'is normally obligatory'; 'is reprehensible'; and 'is normally praiseworthy'.

Value judgments describe facts in an emotive way and tend to influence people by altering their beliefs or attitudes. Such statements as 'this change will increase economic welfare', 'rapid economic development is desirable', 'inequalities of incomes need be reduced', are all value judgments.

Welfare is an ethical term. So all welfare propositions are also ethical and involve value judgments. Such terms as 'satisfaction', 'utility' are also ethical in nature since they are emotive. Similarly, the use of a highly emotive word as 'social', 'community' or 'national' in place of 'economic' is ethical.

Since welfare economics is concerned with policy measures, it involves ethical terminology, such as increase of 'social welfare' or 'social advantage' or 'social benefit'. Thus welfare economics and ethics cannot be separated.

They are inseparable, according to Prof. Little, "because the welfare terminology is a value terminology. Since welfare propositions involve value judgments, the question arises whether economists should make value judgments in economics."

Economists differ over this issue. The neo-classical were concerned with the measurability of utility and the inevitable interpersonal comparisons of utility. Pigou's income-distribution policy, based on Marshall's postulate of equal capacity for satisfaction, implied that interpersonal comparisons of utility were possible.

Robbins, in 1932, led a frontal attack against this view. He maintained that if economics was to be an objective and scientific study, economists should refrain from making interpersonal comparisons, for policy recommendations tend to make some people better off and others worse off.

It is, therefore, not possible to make interpersonal comparisons, i.e. the welfare of one person cannot be compared with that of another.

The majority of economists agreeing with Robbins switched over to the Paretian ordinal method in order to avoid interpersonal comparisons of utility. Kaldor, Hicks and Scitovsky formulated the 'compensation principle' free from value judgments.

Accordingly, economists can make policy recommendations on the basis of efficiency considerations. The objective test of economic efficiency is that the gainers from a change can more than compensate the losers. But this test of increased efficiency implies a value judgment because the gainers from a change are able to compensate the losers.

The very idea of compensation involves value prescriptions. So even the formulators of the 'New Welfare Economics' have not been successful in building a value-free welfare economics.

Prof. Bergson also agrees with Robbins that interpersonal comparisons involve value judgments. But he along with Samuelson and Arrow holds that no meaningful propositions can be made in welfare economics without introducing value judgments. Welfare economics, thus, becomes a normative study which, however, does not prevent economists from studying it scientifically.

Even the Paretian general optimum theory is not value-free. It states that an optimum position is one from which it is not possible to make every one better off without making at least one person worse off, even by re-allocation of resources. This welfare proposition contains certain value judgments. The Paretian optimum is related to the welfare of individual.

In order to attain the optimum position every individual acts as the best judge of his welfare. If any re-allocation of resources makes at least one person better-off without making others worse-off, then the welfare of the society is said to have increased. These are all value judgments which Pareto could not avoid despite the fact that he used the method of ordinal measurement of utility.

#### **Boulding's view merits consideration in this controversy:**

"Whatever may be the case in the Elysian Fields of pure economics, the social fact is that we make... interpersonal comparisons all the time, and that hardly any social policy is possible without them, for almost every social policy makes some people worse-off and some better-off. The Paretian optimum itself is a special case of a social welfare function, for if we assume this to be a social ideal it implies that nobody should ever be made worse-off, whereas most societies have defined certain groups (e.g., criminals or foreigners) who should be made worse-off..."

#### **Conclusion:**

The obvious conclusion emerges from the above discussion that welfare economics and ethics are inseparable and interpersonal comparisons or value judgments are inseparable from welfare economics. All democratic countries have the ideal of a welfare state and the various legislative measures like free education, heavy excise duty on wine, compulsory national insurance, etc. are all value judgments.

The economist cannot be expected to be an arm-chair academician. He can comment and also make policy recommendations on efficiency, distribution and equity grounds. All such recommendations involve value judgments but they must conform to public opinion.

We fully agree with Scitovsky that “after all, it is the function of social science to make value judgments and recommendations on the distribution of welfare; and not only is the economist a social scientist, he is probably the best qualified among social scientists to deal with this subject.”

HILAL SIR 9906837425

## UNIT-2

# MACRO-ECONOMIC ANALYSIS

### Introduction

The classical economists believed in the existence of full employment in the economy. To them, full employment was a normal situation and any deviation from this regarded as something abnormal. According to Pigou, the tendency of the economic systems is to automatically provide full employment in the labour market when the demand and supply of labour are equal. Unemployment results from the rigidities in the wage structure and interference in the working of free market system in the form of trade union legislation, minimum wage legislation etc.

### Its Postulations

- ❖ There is existence of full employment without inflation
- ❖ There is a laissez faire capitalist economy without government interference
- ❖ It is a closed economy without foreign trade
- ❖ There is a perfect competition in labour and product markets
- ❖ Labour is homogenous
- ❖ Total Output of the economy is divided between consumption and investment expenditure
- ❖ The quantity of money is given and money is only the medium of exchange
- ❖ Wages and Prices are perfectly flexible
- ❖ There is a perfect information on the part of all market participants
- ❖ Money wages and real wages are directly related and proportional
- ❖ Capital Stock and technical knowledge
- ❖ The law of diminishing returns operates in production
- ❖ It assumes long run

### Say's Law of Markets

Say's law of markets is the core of the classical theory of employment. There cannot be general overproduction and the problem of unemployment in the economy. If there is general overproduction in the economy, then some labourers may be asked to leave their jobs.

The problem of unemployment arises in the economy in the short run. In the long run the economy will automatically tend toward full employment when the demand and supply of goods become equal. When a producer produces goods and pays wages to workers, the workers in turn buy goods in the market. Thus the very act of supplying goods implies a demand for them. It is in this way that supply creates its own demand.

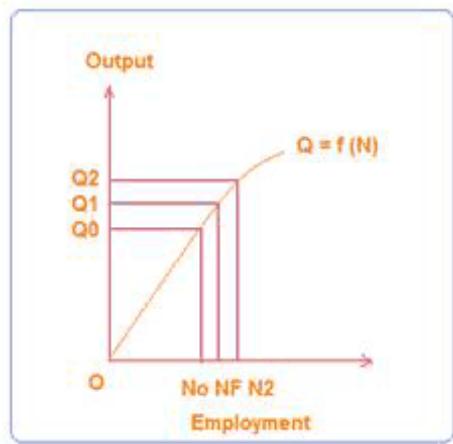
### Determination of Output and Employment

In the classical theory output and employment are determined by the production function and the demand for labour and the supply of labour in the economy. Given the capital stock, technical knowledge and other factors, a precise relation exists between total output and amount of employment, i.e. number of workers. This is shown in the form of the following production function.

$$Q = f(K, T, N)$$

Where, total output Q is a function (f) of capital stock (K), technical knowledge (T) and the number of workers (N).

Given K and T, the production function becomes  $Q = f(N)$  which shows that output is a function of the number of workers, output increases as the employment of labour arises.



But after a point when more workers are employed, diminishing marginal returns to labour start, where the curve  $Q = f(N)$  is the production function and the total output  $OQ_1$  corresponds to the full employment level  $NF$ . But when more workers  $N_1, N_2$  are employed beyond the full employment level of output  $OQ_1$ , the increase in output  $Q_1Q_2$  is less than the increase in employment  $N_1N_2$ . It is represented in the above diagram.

### Criticism of Classical Theory

#### Underemployment Equilibrium

Keynes rejected the fundamental classical assumptions of full employment equilibrium in the economy. He considered it as unrealistic. He regarded full employment as a special situation. The general situation in a capitalist economy is one of underemployment. This is for the reason that the capitalist society does not function according to Say's Law and supply always exceeds its demand.

We find millions of workers are prepared to work at current wage rate and even below it, but they do not find work. Thus the existence of involuntary unemployment in capitalist economies proves that underemployment equilibrium is a normal situation and full employment equilibrium is abnormal and accidental.

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#### The Classical Theory of Employment and Output!

Classical economists such as Adam Smith and Ricardo maintained that the growth of income and employment depends on the growth of the stock of fixed capital and inventories of wage goods. But, in the short run, the stock of fixed capital and wage goods inventories are given and constant. According to them, even in the short run full-employment of labour force would tend to prevail as the economy would not experience any problem of deficiency of demand.

On the basis of their theory they denied the possibility of the existence of involuntary unemployment in the economy.

The short-run classical theory of income and employment can be explained through the following three stages:

1. Determination of income and employment when there is no saving and investment;
2. Determination of income and employment in an economy with saving and investment; and
3. Determination of income and employment: Role of money and prices.

#### Determination of Income and Employment in the Short Run without Saving and Investment:

According to the classical theory, the magnitude of national income and employment depends on the aggregate production function and the supply and demand for labour. To show this let us assume that the economy produces one homogeneous and divisible good, say corn. Let symbol Y stand for the output of this good.

#### To produce this good we require two factors of production:

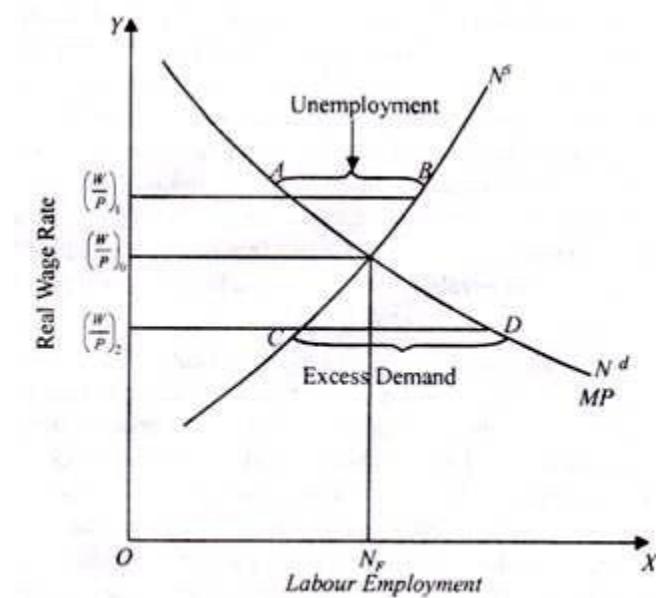
(1) Labour which we denote by N and (2) capital which we denote by K. Thus we have the following aggregate production function

$$Y = F(K, N)$$

In the short run the stock of capital (i.e. plant and equipment) is assumed to be fixed. The state of technology and the population are also assumed to be constant in the short run. Thus, rewriting the aggregate production function we have

$$\bar{Y} = \bar{F}(K, N)$$

The bar over the symbol K for capital indicates that stock of capital is fixed. It is worth noting that change in technology will cause a shift the production junction.



**Fig. 3.1. Labour-Market Equilibrium : Determination of Employment and Wages**

Therefore, with a fixed capital stock and a given and constant technology, the output Y (or what is also the real income) would increase only when employment of labour N increases. That is, employment of labour

and output (income) rise or fall together. Now, according to classical theory, with a fixed capital stock as employment of labour increases, marginal product of labour would diminish. This is the famous law of diminishing returns of the classical economics.

The demand for labour is derived from this short-run production function that is, diminishing marginal product of labour. The classical theory assumes perfect competition in both the factor and product markets. Further, assuming that the firms which undertake the task of production attempt to maximise profits, they will employ labour until the marginal product of labour is equal to the given real wage rate.

It may be noted that real wage rate is given by nominal wage rate divided by the general price level, that is, real wage rate =  $W/P$  where  $W$  is the nominal or money wage rate and  $P$  is the average price level. Thus, a firm will employ so much labour at which

$$W/P = MPN$$

where  $MPN$  stands for marginal product of labour.

At a lower real wage rate, more labour will be demanded or employed by the firms and vice versa. Thus, the demand curve for labour is derived from the marginal product curve of labour. In fact, the former coincides with the latter. Thus demand function for labour can be written as

$$Nd=f(W/P)$$

Consider Fig. 3.1 where  $MP$  curve depicts the diminishing marginal product of labour with a given stock of fixed capital and a given state of technology. As explained just above, marginal product ( $MP$ ) curve of labour also represents the demand curve of labour ( $Nd$ ).

On the other hand, the supply of labour by the households in the economy depends on their pattern of preference between income and leisure. The classical theory assumes that in the short run when population does not vary, supply curve of labour slopes upward. Now, what is the rational behind the upward-sloping supply curve of labour.

This is based on the assumption that households or individual workers maximise their utility or satisfaction in their choice of work (which yields them income) and leisure. When real wage rate rises, two effects work in opposite direction.

It may be noted that real wage is the opportunity cost or relative price of leisure. When real wage rate rises leisure becomes relatively more expensive, that is, opportunity cost or price of leisure in terms of income forgone by not working goes up. This induces the individual to work more (i.e. supply more labour hours) and thereby substitutes income for leisure. This is the substitution effect.

On the other hand, with a rise in real wage rate individuals become relatively richer than before, and this induces them to consume more of all commodities (including leisure which is regarded as a normal commodity). This is income effect of the rise in real wage rate which tends to increase leisure and reduce labour-hours supplied.

The classical economists believed that substitution effect is larger than income effect of the rise in real wage rate and as a result supply of labour increases with the rise in wage rate. Thus the supply function of labour can be written as

$$Ns=g(W/P)$$

This implies that at a higher wage rate, more labour would be supplied and vice versa. It will be seen from Fig. 3.1 that supply and demand for labour are in equilibrium at the real wage rate ( $W/P$ )

Hence, given the supply and demand curves, the wage rate  $W/P$  is determined. It will be seen that ON labour is employed in this equilibrium situation. Thus, in classical theory level of employment is determined by labour market equilibrium. This equilibrium between supply and demand for labour at the real wage rate  $W/P$  implies that all those who offer their labour services at this wage rate are in fact employed.

There is neither excess supply of labour, nor excess demand for labour. In other words, there is no involuntary unemployment of labour in this equilibrium situation. If somehow real wage rate in the labour market is higher than this equilibrium wage rate ( $W/P_0$ ), say it is equal to ( $W/P_1$ ) then it will be observed from Fig. 3.1 that excess supply of labour equal to AB would emerge. In other words, at real wage rate ( $W/P_1$ ), AB workers will be unemployed.

But given the competition among workers, the excess supply of labour at wage rate ( $W/P_1$ ) would cause the wage rate to fall to the equilibrium level ( $W/P_0$ ) at which the labour market is cleared. On the contrary, if somehow real wage rate in the labour market is ( $W/P_2$ ) the firms would demand more labour than is offered at this real wage rate.

As a result of the competition among the firms to hire labour desired by them, the wage rate would go up to the equilibrium level ( $W/P_0$ ). At ( $W/P_0$ ) to repeat, all those who offer their labour services are in fact demanded and employed. It therefore follows that at the real wage ( $W/P_0$ ), there is no involuntary unemployment, or, in other words, full-employment of labour prevails. Further, it is the wage flexibility (i.e., changes in the wage rate) which ultimately brings about this full-employment situation.

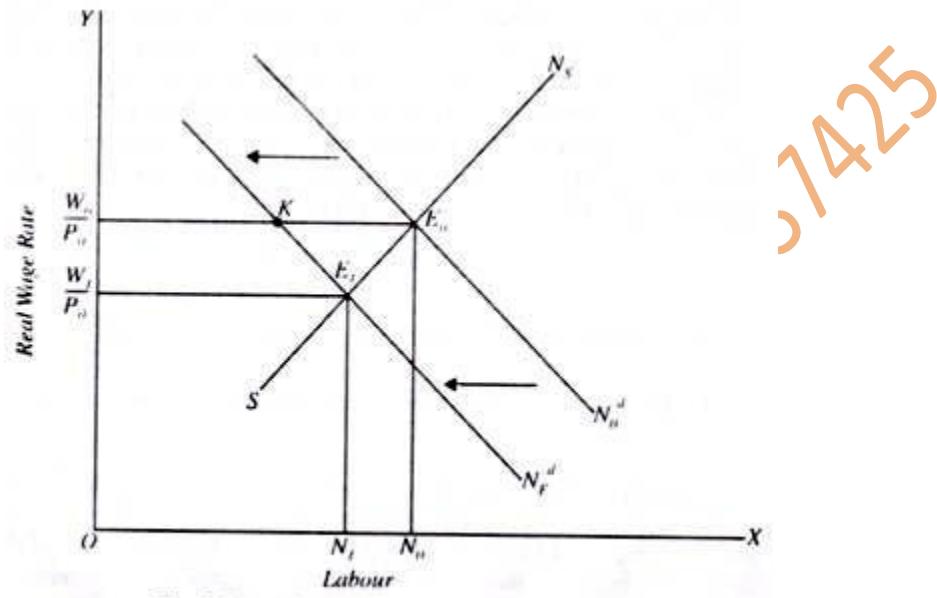
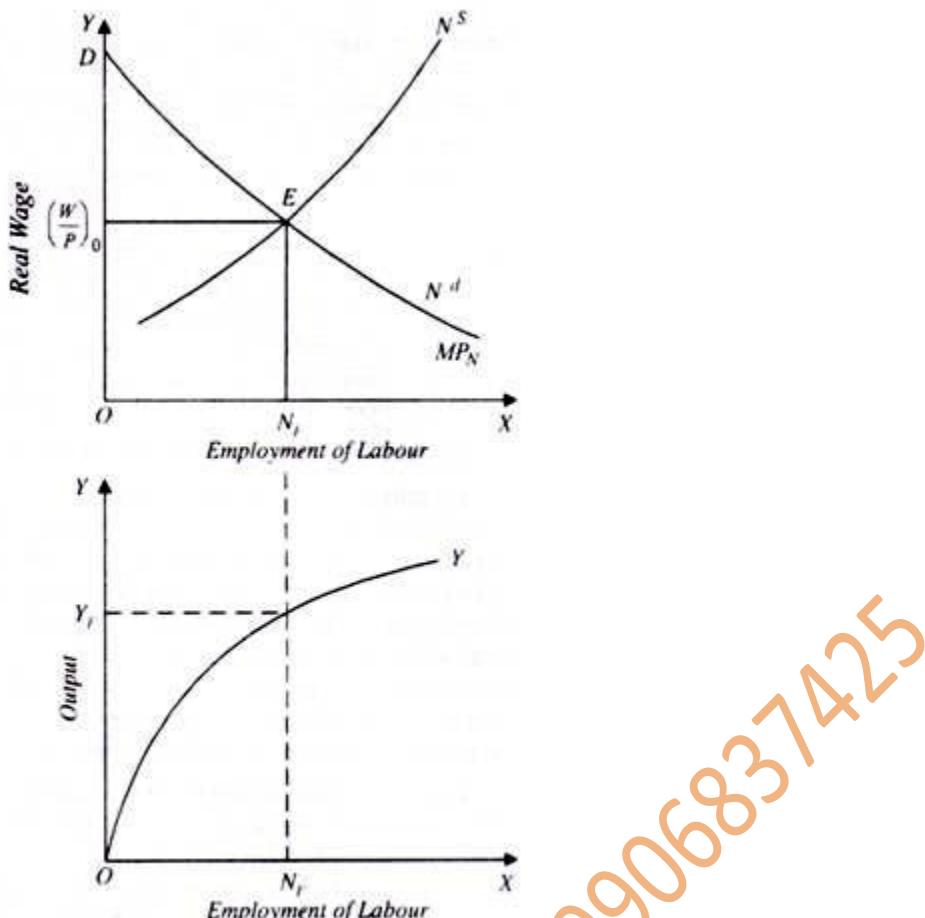


Fig. 3.1A. Adjustment of real wage rate

To clarify further the restoration of full employment of labour due to quick adjustment of real wage rate let us consider the decrease in demand for Y labour following the fall in aggregate demand for output as it happens when depression or recession occurs in the economy. Consider Fig. 3.1(A) where following the  $\approx c$  decrease in aggregate demand for output labour demand curve shifts to the left to  $N_d$  so that at the initial wage rate  $W_0 / P_0$  fewer workers will be demanded than the number of workers who are willing to supply their labour at this wage rate. As a result (as is seen from Fig. 3.1 A) the excess supply of labour equal to  $KE_0$  will emerge at this initial real wage rate  $W_0/P_0$ .

However, in the classical full employment model this excess supply of labour (i.e. unemployment of workers) will cause real wage rate to fall to  $W_1/P_0$  (where  $W_1 < W_0$ ) at which new equilibrium between demand for and supply of labour is again established at point  $E_1$ . Note that even in this new labour market equilibrium at lower real wage rate  $W_1/P_0$  full employment of labour prevails as all those who are willing to work at this real wage rate find employment. Of course,  $N_0N_1$  workers have voluntarily withdrawn themselves from labour force and therefore no one remains involuntarily unemployed.



**Fig. 3.2.** Classical Theory : Determination of Employment and Output

How much output will be produced in this full employment situation can be readily known from the aggregate production function. We depict this in Fig. 3.2 where in addition to the supply of and demand for labour, the aggregate production function (OY) representing the relation between employment of labour (N) and total output (K) is shown. It will be seen from the lower panel of Fig. 3.2 that, given the stock of fixed capital and the state of technology, employment of ONF labour produces OYF output.

This output OYF of corn will constitute the income of the society and will be distributed between wages and profits. Thus sum of wages as reward for labour and total profits as reward for capital would constitute the total income of the society and would be equal to the national output OYF produced.

It follows from above that the quick changes in the real wage rate upward or downward ensures that neither excess supply of labour, nor excess demand for labour will persist and thus equilibrium will be reached with full employment of labour in the economy. Further, given the stock of capital and the state of technology with this full employment of labour, total output or income of the economy equal to OYF is determined.

Now, an important question to enquire is what guarantees that output produced by the full employment of labour and the level of capital (assumed as fixed in the short run) will be actually demanded. If this does not happen, then the problem of insufficient demand for the output (i.e., corn) will emerge which will ultimately lead to reduction in output and employment and hence to the emergence of involuntary unemployment.

#### Say's Law and No Deficiency of Demand:

In the absence of saving and investment which we are assuming here, classical economists ruled out the possibility of deficiency of aggregate demand on the basis of Say's law. Say's law, as mentioned above, states that supply creates its own demand, that is, acts of production of goods create demand equal to the value of output of goods produced. Factors of production earn their incomes during the process of production. Since

no part of income is saved as is being assumed here the entire income will be spent on consumer goods produced.

Value of output produced will therefore be equal to the income generated in the process of production. Thus, quantity demanded will be equal to the supply of output produced. In Fig. 3.2, wages earned by ONF quantity of labour employed and profits earned by the entrepreneurs will be spent on OYF output. Expenditure so made will be equal to the value of output produced. Aggregate demand being equal to aggregate supply, there is no problem of deficiency of demand.

Say's law that "supply creates its own demand" holds and full employment of labour is guaranteed. In this way classical theory denies the possibility of involuntary unemployment. It needs to be emphasised that under such conditions, two things ensure full employment. First, it is because saving and investment are excluded from the system so that entire income is spent on consumer goods. Second, real wage rate changes quickly to bring about equilibrium between demand for and supply of labour.

#### **Classical Model: Determination of Income and Employment with Saving and Investment:**

In applying Say's law that supply creates its own demand an invalid assumption was made above that entire income earned by the households will be actually spent. Although it is correct that production of output generates an equal amount of income but what is the guarantee that all income earned by factors/households will be actually spent on goods and services produced. In fact, a part of income might be saved. Saving represents a withdrawal of some income from the expenditure flow.

This will result in deficiency of demand or expenditure on output of goods produced. Thus, if a part of income is saved (that is, not spent), supply of output produced would not create sufficient demand for itself. This will cause deficiency of aggregate demand which will cause fall in output and employment and the emergence of involuntary unemployment.

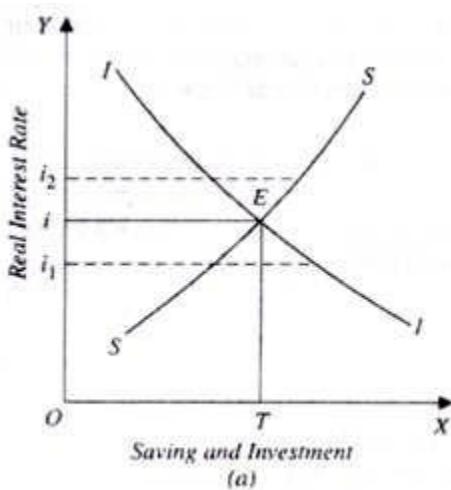
However, classical economists denied the possibility of deficiency of aggregate demand even when a part of income is saved by the households. They showed that Say's law that supply creates its own demand holds good even in the presence of saving. They argued that every rupee saved by households will be invested by businessmen, that is, investment expenditure will be equal to savings done by households. In fact, output produced consists of consumer goods and capital goods.

Income earned from production will be partly spent on consumer goods and partly on investment in capital goods. What is not spent on consumer goods is saved and investment expenditure on capital goods made by businessmen equals this savings. Therefore, there is no deficiency of demand or expenditure and circular flow of income goes on undisturbed. Thus, supply goes on creating its own demand and Say's law applies.

Now the pertinent question is what is the guarantee that investment expenditure will be equal to savings of the households. According to classical economists, it is the changes in the rate of interest that brings about equality between saving and investment. Further, according to them, rate of interest is determined by supply of savings and demand for investment. The investment demand is stipulated to be decreasing function of the rate of interest.

At the lower rate of interest, more would be borrowed for investment. On the other hand, the savings of the people are taken to be the increasing function of the rate of interest, that is, higher the rate of interest, the larger the savings and vice versa. The loan market will be in equilibrium at the rate of interest at which the demand for investment is equal to the supply of savings. The changes in rate of interest would cause investment and supply of saving to become equal. This is illustrated in Fig. 3.3 (a). It will be seen that intersection of investment demand curve II and the supply of savings curve SS determines the rate of interest i.

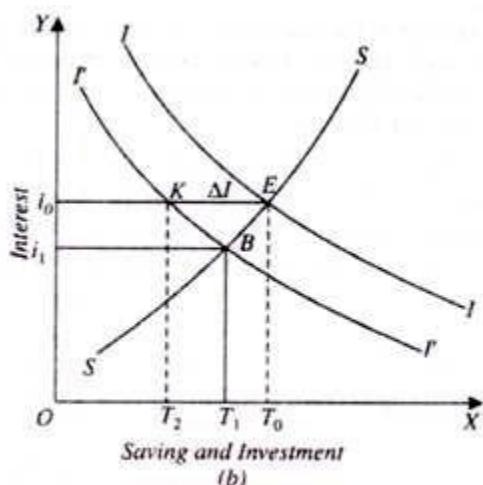
At a higher rate of interest  $i_2$ , the investment demand is less than the intended supply of savings. Due to the excess supply of savings, the rate of interest would fall to  $i$ . On the contrary, at a lower rate of interest, say  $i_1$  the demand for investment exceeds the supply of savings. Now, due to the excess demand for investment in the loan market rate of interest would go up. Thus, it is at rate of interest  $I$  that loan market is in equilibrium, i.e., investment is equal to savings ( $I = S$ ).



**Fig. 3.3.** Changes in rate of interest bring about equality between saving and investment.

Now an important thing to know about classical theory is when due to decline in profit expectations of business firms if investment falls as it happens at times of recession or depression how it then explains that demand deficiency problem would not arise and equilibrium will continue to remain at full employment. This is illustrated in Figure 3.4, where initially saving and investment are in equilibrium at rate of interest  $i_0$ .

Now suppose that due to fall in profit expectations investment by business firms decreases by  $\Delta I$  or  $EK$  causing a shift in the investment curve to the left to the new position  $I'I'$ . With this at the initial rate of interest  $i_0$ , the supply of savings exceeds investment by  $KE$ . This excess supply of savings will put downward pressure on the rate of interest and as result interest will fall to  $i_1$ , at which saving and investment are again equal.



**Fig. 3.4.** Decrease in investment demand does not disturb full-employment equilibrium.

According to classical theory, the lower interest induces more investment and therefore as a result of fall in interest to  $i_1$ , investment increases from  $OT_2$  Besides, with the fall in interest rate from  $i_0$  to  $i_1$ , savings decline by  $OT_1$  which implies consumption demand will increase by  $OT_1$ .

Thus, shift in investment demand curve to the left results in lowering of rate of interest which leads to more investment and consumption demand so that aggregate demand is not affected. It is thus clear that due to adjustment in interest rate even decline in investment does not give rise to demand deficiency problem and full-employment continues to prevail.

It follows from above that the equality between investment and saving, brought about by changes in the rate of interest, would guarantee that aggregate demand for output would be equal to aggregate supply of output.

Thus, the problem of deficiency of aggregate demand would not be faced and full employment of labour will prevail.

#### **Classical Theory of Income and Employment: Aggregate Demand, Money and Prices:**

Now, we shall examine how full employment of labour is assured in the classical theory even when money is introduced in the system. The introduction of money does not affect the result of the classical theory that problem of deficiency of aggregate demand would not be experienced by the free-market system and therefore full employment of labour is guaranteed.

The quantity of money, according to the classical theory, determines only the price level of output and in no way affects the real magnitudes of saving and investment. Further, since quantity of money determines the price level of output, it also affects real wage rate, that is, the ratio of money wages and the price level, or  $W/P$ . But with increase in money supply, money wages and price level change in such a way that real wage rate in the equilibrium situation remains constant and equilibrium in the labour market is automatically restored.

Besides, with the increase in money supply and consequent change in the price level, saving-investment equilibrium will not be disturbed and therefore deficiency of aggregate demand will not arise. Let us first explain how in classical theory price level in the economy is determined. Classical economists believed in the Quantity Theory of Money according to which it is the supply of money that determines price level in an economy.

**Quantity theory of money is generally expressed by Fisher's equation of exchange, income version of which is stated as under:**

$$MV = PY$$

$$P = MV/Y$$

M = Quantity of money

V – Income velocity of circulation of money

Y = Level of aggregate output (or real income)

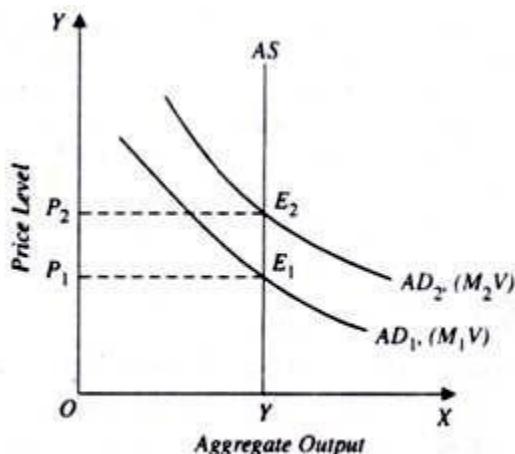
P = Price level of goods and services

Velocity of money is defined as the number of times a unit of money is used for purchase of final goods and services in a period, say during a year. In classical theory velocity is assumed to be constant. Besides, since in classical theory level of aggregate output is determined by the supply of productive resources, (i.e., capital stock, availability of labour, land etc.) and the state of technology which do not change in the short run.

Further, due to operation of Say's law and wage-price flexibility full employment of resources occur in the economy. Thus, with a given amount of productive resources and constant technology and with further assumption that they are fully utilised and employed, the aggregate output (Y) is held constant at full-employment level of output in the short run.

Therefore, in Fig. 3.5 we have shown aggregate supply curve as a vertical straight line which shows that whatever the price level, aggregate output remains constant.

From equation (ii) above it follows that, with V and Q remaining constant, increase in money supply will cause proportionate increase in the price level.



**Fig. 3.5.** Increase in the quantity of money causes proportionate rise in the price level.

The effect of increase in the quantity of money is graphically shown in Fig. 3.5. It may be noted that  $MV$  in the quantity theory of money represents aggregate expenditure on goods and services made in a year. For instance, if money supply in an economy equals Rs. 500 crores and velocity of circulation is 4, then  $500 \times 4 = 2000$  crores will be aggregate expenditure.

In other words, in Figure 3.5  $MV$  represents aggregate expenditure or aggregate demand (AD) curve which slopes downward to the right. This is because at a lower price level, given the aggregate expenditure as determined by  $MV$ , more quantity of goods and services will be purchased.

Suppose quantity of money in the economy is equal to  $M_1$ . With velocity of money  $V$ , aggregate expenditure on final goods and services will be equal to  $M_1V$  and corresponding to this aggregate demand curve  $AD_1$  has been drawn in Fig. 3.5. With aggregate supply curve AS and aggregate demand curve  $AD_1$  price level  $OP_1$  is determined.

Now, with increase in money supply to  $M_2$ , velocity of money  $V$  remaining constant, aggregate expenditure will rise to  $M_2V$  and aggregate demand curve will shift to the right to  $AD_2$  position. Intersection of aggregate demand curve  $AD_2$  and aggregate supply curve AS determines a higher price level  $OP_2$ . It therefore follows that increase in the quantity of money causes price level to rise. Indeed, the rise in price level will be proportional to the increase in quantity of money.

#### Classical Aggregate Supply Curve:

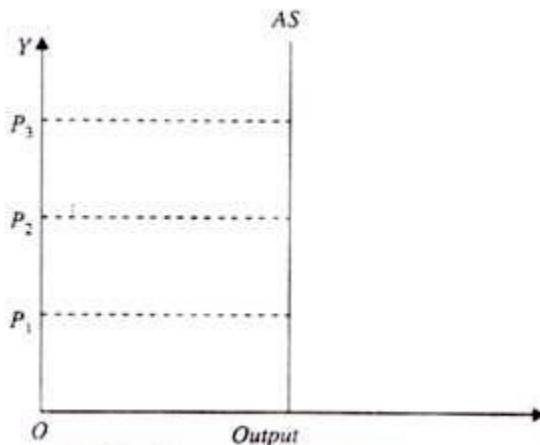
Aggregate supply curve describe the relationship between aggregate supply of output with price level. Classical theory regards aggregate supply curve to be perfectly inelastic. Now, an important question is why in classical model, aggregate supply curve is perfectly inelastic. As explained above, aggregate output  $Y_F$  is determined by the equilibrium level of employment  $N_F$  given the aggregate production function.

Equilibrium level of employment along with real wage rate is determined by labour market equilibrium, that is, equilibrium between demands for the supply of labour.

Thus, in classical theory aggregate supply curve is determined by supply-side factors, namely, preferences of households or individuals regarding work and leisure, the stock of capital (and other factor endowments), the state of technology. Supply of labour, as seen above, is determined by individual preferences between work and leisure and demand curve for labour is determined by marginal product of labour.

Thus in classical model aggregate supply curve reflects supply-determined nature of output and does not depend on the aggregate demand and price level. The classical aggregate supply curve is shown in Fig. 3.6. The pertinent questions is how with changes in price level, which in the classical theory depends on the quantity of money, leave level of employment and output unaffected.

The reason for this is that changes in price level causes equal proportionate changes in money wage rate with the result that the equilibrium real wage rate which is given by  $W/P$  remains constant and therefore equilibrium level of employment does not get affected. The adjustment process works in the following way.



**Fig. 3.6. Classical Aggregate Supply Curve**

If due to the increase in supply of money price level rises, with a given money wage rate ( $W$ ), real wage rate, which is equal to  $W/P$ , will fall. At a real wage rate lower than the equilibrium real wage rate, the quantity demanded of labour will exceed the supply of labour.

This disequilibrium between labour demand and supply will cause money wage rate to rise to the level so that original real wage rate determined by labour market equilibrium is restored. Suppose that in labour-market equilibrium money wage rate  $W_1$  and given the price level equal to  $P_1$  and the equilibrium real wage rate will be  $W_1/P_1$ . Now, if price level is doubled to  $2P_1$  and money wage rate rises to  $2W_1$ , then the equilibrium real wage rate will become equal to  $2W_1/2P_1 = W_1/P_1$ .

Thus, with equal proportionate increase in money wage rate as a result of rise in price level, equilibrium real wage rate and level of employment will remain unaffected. Thus, with rise in price level, level of employment remains unchanged and, given the aggregate production function, level of output will remain constant. This implies that aggregate supply curve of output is perfectly inelastic.

Thus whatever the price level, money wage rate changes in such a way that equilibrium real wage rate, level of employment and therefore output remain constant. Thus in classical theory aggregate supply of output is determined by supply-side real variables and does not depend on money and prices.

### The Keynesian Theory of Income, Output and Employment!

In the Keynesian theory, employment depends upon effective demand. Effective demand results in output. Output creates income. Income provides employment. Since Keynes assumes all these four quantities, viz., effective demand (ED), output (Q), income (Y) and employment (N) equal to each other, he regards employment as a function of income.

Effective demand is determined by two factors, the aggregate supply function and the aggregate demand function. The aggregate supply function depends on physical or technical conditions of production which do not change in the short-run.

Since Keynes assumes the aggregate supply function to be stable, he concentrates his entire attention upon the aggregate demand function to fight depression and unemployment. Thus employment depends on aggregate demand which in turn is determined by consumption demand and investment demand.

According to Keynes, employment can be increased by increasing consumption and/or investment. Consumption depends on income  $C(Y)$  and when income rises, consumption also rises but not as much as income. In other words, as income rises, saving rises.

Consumption can be increased by raising the propensity to consume in order to increase income and employment. But the propensity to consume depends upon the psychology of the people, their tastes, habits, wants and the social structure which determine the distribution of income.

All these elements remain constant during the short-run. Therefore, the propensity to consume is stable. Employment thus depends on investment and it varies in the same direction as the volume of investment.

Investment, in turn, depends on the rate of interest and the marginal efficiency of capital (MEC). Investment can be increased by a fall in the rate of interest and/or a rise in the MEC. The MEC depends on the supply price of capital assets and their prospective yield.

It can be raised when the supply price of capital assets falls or their prospective yield increases. Since the supply price of capital assets is stable in the short-run, it is difficult to lower it. The second determinant of MEC is the prospective yield of capital assets which depends on the expectations of yields on the part of businessmen. It is again a psychological factor which cannot be depended upon to increase the MEC to raise investment. Thus there is little scope for increasing investment by raising the MEC.

The other determinant of investment is the rate of interest. Investment and employment can be increased by lowering the rate of interest. The rate of interest is determined by the demand for money and the supply of money. On the demand side is the liquidity preference (LP) schedule.

The higher the liquidity preference, the higher is the rate of interest that will have to be paid to cash holders to induce them to part with their liquid assets, and vice versa. People hold money ( $M$ ) in cash for three motives: transactions, precautionary and speculative.

The transactions and precautionary motives ( $M$ ) are income elastic. Thus the amount held under these two motives ( $M_1$ ) is a function ( $L_1$ ) of the level of income ( $Y$ ), i.e.  $M=L(Y)$ . But the money held for speculative motive ( $M_2$ ) is a function of the rate of interest ( $r$ ), i.e.  $M=L_2(r)$ . The higher the rate of interest, the lower the demand for money, and vice versa.

Since LP depends on the psychological attitude to liquidity on the part of speculators with regard to future interest rates, it is not possible to lower the liquidity preference in order to bring down the rate of interest. The other determinant of interest rate is the supply of money which is assumed to be fixed by the monetary authority during the short-run.

The relation between interest rate, MEC and investment is shown in Figure 1, where in Panels (A) and (B) the total demand for money is measured along the horizontal axis from  $M$  onward. The transactions (and precautionary) demand is given by the  $L_1$  curve at  $OY_1$  and  $OY_2$  levels of income in Panel (A) of the figure.

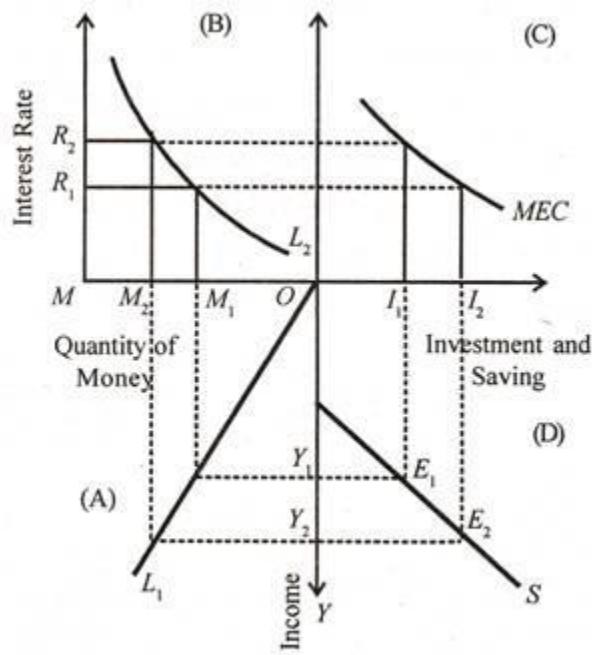


Fig. 1

Thus at  $OY_1$  income level, the transactions demand is given by  $OM_1$  and at  $OY_2$  level of income it is  $OM_2$ . In Panel (B), the  $L_2$  curve represents the speculative demand for money as a function of the rate of interest.

When the rate of interest is  $R_2$ , the speculative demand for money is  $MM_2$ . With the fall in the rate of interest to  $R_1$ , the speculative demand for money increases to  $MM_1$ . Panel (C) shows investment as a function of the rate of interest and the MEC. Given the MEC, when the rate of interest is  $R_2$ , the level of investment is  $OI_1$ . But when the rate of interest falls to  $R_1$ , investment increases to  $OI_2$ .

"In the Keynesian analysis, the equilibrium level of employment and income is determined at the point of equality between saving and investment. Saving is a function of income, i.e.  $S=f(Y)$ . It is defined as the excess of income over consumption,  $S=Y-C$  and income is equal to consumption plus investment.

Thus  $Y = C + I$

Or  $Y - C = I$

$Y - C = S$

$I = S$

So the equilibrium level of income is established where saving equals investment. This is shown in Panel (D) of Figure 1 where the horizontal axis from  $O$  toward the right represents investment and saving, and  $OY$  axis represents income.  $S$  is the saving curve.

The line  $I_1E_1$  is the investment curve (imagine that it can be extended beyond  $E$  as in an  $S$  and  $I$  diagram) which touches the  $S$  curve at  $E_1$ . Thus  $OY_1$  is the equilibrium level of employment and income. This is the level of underemployment equilibrium, according to Keynes. If  $OY_2$  is assumed to be the full employment level of income then the equality between saving and investment will take place at  $E_2$  where  $I_2E_2$  investment equals  $Y_2E_2$  saving.

The Keynesian theory of employment and income is also explained in terms of the equality of aggregate supply ( $C+S$ ) and aggregate demand ( $C+I$ ). Since unemployment results from the deficiency of aggregate demand, employment and income can be increased by increasing aggregate demand.

Assuming the propensity to consume to be stable during the short-run, aggregate demand can be increased by increasing investment. Once investment increases, employment and income increase. Increased income

leads to a rise in the demand for consumption goods which leads to further increase in employment and income.

Once set in motion, employment and income tend to rise in a cumulative manner through the multiplier process till they reach the equilibrium level. According to Keynes, the equilibrium level of employment will be one of under-employment equilibrium because when income increases consumption also increases but by less than the increase in income.

This behaviour of the consumption function widens the gap between income and consumption which ordinarily cannot be filled up due to the lack of required investment. The full employment income level can only be established if the volume of investment is increased to fill the income-consumption gap corresponding to full employment.

The Keynesian cross model of under-employment equilibrium is explained in Figure 2 where income and employment are taken on the horizontal axis and consumption and investment on the vertical axis. Autonomous investment is taken as a first approximation.  $C+I$  is the aggregate demand curve plotted by adding to consumption function  $C$  an equal amount of investment at all levels of income.

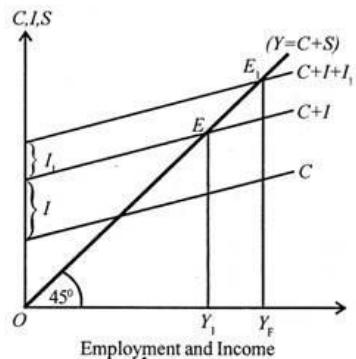


Fig. 2

The  $45^\circ$  line is the aggregate supply curve. The economy is in equilibrium at point E where the aggregate demand curves  $C+I$  intersects the  $45^\circ$  line. This is the point of effective demand where the equilibrium level of income and employment  $OY_1$  is determined.

This is the level of under-employment equilibrium and not of full employment. There are no automatic forces that can make the two curves cross at a full employment income level. If it happens to be a full employment level, it will be accidental. Keynes regarded the under-employment equilibrium level as a normal case and the full employment income level as a special case.

Suppose  $OY_F$  is the full employment income level. To reach this level, autonomous investment is increased by  $I_1$  so that the  $C+I$  curve shifts upward as  $C+I+I_1$  curve. This is the new aggregate demand curve which intersects the  $45^\circ$  line (the aggregate supply curve) at  $E_1$ , the higher point of effective demand corresponding to the full employment income level  $OY_F$ .

This also reveals that to get a desired increase in employment and income of  $Y_1Y_F$ , it is the multiplier effect of an increase in investment by  $I_1$  ( $=I_2$  in Panel C of Figure 1) which leads to an increase in employment and income by  $Y_1Y_F$  through successive rounds of investment.

### Absolute, Relative and Permanent Income Hypothesis

#### 1. Absolute Income Hypothesis:

Keynes' consumption function has come to be known as the 'absolute income hypothesis' or theory. His statement of the relationship between income and consumption was based on the 'fundamental psychological law'.

He said that consumption is a stable function of current income (to be more specific, current disposable income—income after tax payment).

Because of the operation of the 'psychological law', his consumption function is such that  $0 < MPC < 1$  and  $MPC < APC$ . Thus, a non-proportional relationship (i.e.,  $APC > MPC$ ) between consumption and income exists in the Keynesian absolute income hypothesis. His consumption function may be rewritten here with the form

$$C = a + bY, \text{ where } a > 0 \text{ and } 0 < b < 1.$$

It may be added that all the characteristics of Keynes' consumption function are based not on any empirical observation, but on 'fundamental psychological law', i.e., experience and intuition.

#### **(i) Consumption Function in the Light of Empirical Observations:**

Meanwhile, attempts were made by the empirically-oriented economists in the late 1930s and early 1940s for testing the conclusions made in the Keynesian consumption function.

#### **(ii) Short Run Budget Data and Cyclical Data:**

Let us consider first the budget studies data or cross-sectional data of a cross section of the population and then time-series data. The first set of evidence came from budget studies for the years 1935-36 and 1941-42. These budget studies seemed consistent with the Keynes' own conclusion on consumption-income relationship. The time-series data of the USA for the years 1929-44 also gave reasonably good support to the Keynesian theoretical consumption function.

Since the time period covered is not long enough, this empirical consumption function derived from the time-series data for 1929-44 may be called 'cyclical' consumption function. Anyway, we may conclude now that these two sets of data that generated consumption function consistent with the Keynesian consumption equation,  $C = a + bY$ .

Further,  $0 < b < 1$  and  $AMC < APC$ .

#### **(iii) Long Run Time-Series Data:**

However, Simon Kuznets (the 1971 Nobel prize winner in Economics) considered a long period covering 1869 to 1929. His data may be described as the long run or secular time-series data. This data indicated no long run change in consumption despite a very large increase in income during the said period. Thus, the long run historical data that generated long run or secular consumption function were inconsistent with the Keynesian consumption function.

#### **From Kuznets' data what is obtained is that:**

- (a) There is no autonomous consumption, i.e., 'a' term of the consumption function and
- (b) A proportional long run consumption function in which  $APC$  and  $MPC$  are not different. In other words, the long run consumption function equation is  $C = bY$ .

As  $a = 0$ , the long run consumption function is one in which  $APC$  does not change over time and  $MPC = APC$  at all levels of income as contrasted to the short run non-proportional ( $MPC < APC$ ) consumption-income relationship. Being proportional, the long run consumption function starts from the origin while a non-proportional short run consumption function starts from point above the origin. Keynes, in fact, was concerned with the long run situation.

But what is baffling and puzzling to us that the empirical studies suggest two different consumption functions a non-proportional cross-section function and a proportional long run time-series function.

#### **2. Relative Income Hypothesis:**

Studies in consumption then were directed to resolve the apparent conflict and inconsistencies between Keynes' absolute income hypothesis and observations made by Simon Kuznets. Former hypothesis says that in the short run  $MPC < APC$ , while Kuznets' observations say that  $MPC = APC$  in the long run.

One of the earliest attempts to offer a resolution of the conflict between short run and long run consumption functions was the 'relative income hypothesis' (henceforth RIH) of J.S. Duesenberry in 1949. Duesenberry

believed that the basic consumption function was long run and proportional. This means that average fraction of income consumed does not change in the long run, but there may be variation between consumption and income within short run cycles.

Duesenberry's RIH is based on two hypotheses first is the relative income hypothesis and second is the past peak income hypothesis.

Duesenberry's first hypothesis says that consumption depends not on the 'absolute' level of income but on the 'relative' income— income relative to the income of the society in which an individual lives. It is the relative position in the income distribution among families influences consumption decisions of individuals.

A household's consumption is determined by the income and expenditure pattern of his neighbours. There is a tendency on the part of the people to imitate or emulate the consumption standards maintained by their neighbours. Specifically, people with relatively low incomes attempt to 'keep up with the Joneses'—they consume more and save less. This imitative or emulative nature of consumption has been described by Duesenberry as the "demonstration effect."

The outcome of this hypothesis is that the individuals' APC depends on his relative position in income distribution. Families with relatively high incomes experience lower APCs and families with relatively low incomes experience high APCs. If, on the other hand, income distribution is relatively constant (i.e., keeping each family's relative position unchanged while incomes of all families rise), Duesenberry then argues that APC will not change.

Thus, in the aggregate we get a proportional relationship between aggregate income and aggregate consumption. Note MPC = APC. Hence the RIH says that there is no apparent conflict between the results of cross-sectional budget studies and the long run aggregate time-series data.

In terms of the second hypothesis short run cyclical behaviour of the Duesenberry's aggregate consumption function can be explained. Duesenberry hypothesised that the present consumption of the families is influenced not just by current incomes but also by the levels of past peak incomes, i.e.,  $C = f(Y_{ri}, Y_{pi})$ , where  $Y_{ri}$  is the relative income and  $Y_{pi}$  is the peak income.

This hypothesis says that consumption spending of families is largely motivated by the habitual behavioural pattern. If current incomes rise, households tend to consume more but slowly. This is because of the relatively low habitual consumption patterns and people adjust their consumption standards established by the previous peak income slowly to their present rising income levels.

On the other hand, if current incomes decline these households do not immediately reduce their consumption as they find it difficult to reduce their consumption established by the previous peak income. Thus, during depression consumption rises as a fraction of income and during prosperity consumption does increase slowly as a fraction of income. This hypothesis thus generates a non-proportional consumption function.

Duesenberry's explanation of short run and long run consumption function and then, finally, reconciliation between these two types of consumption function can now be demonstrated in terms of Fig. 3.39. Cyclical rise and fall in income levels produce a non-proportional consumption-income relationship, labelled as CSR. In the long run as such fluctuations of income levels are smoothed, one gets a proportional consumption-income relationship, labelled as CLR.

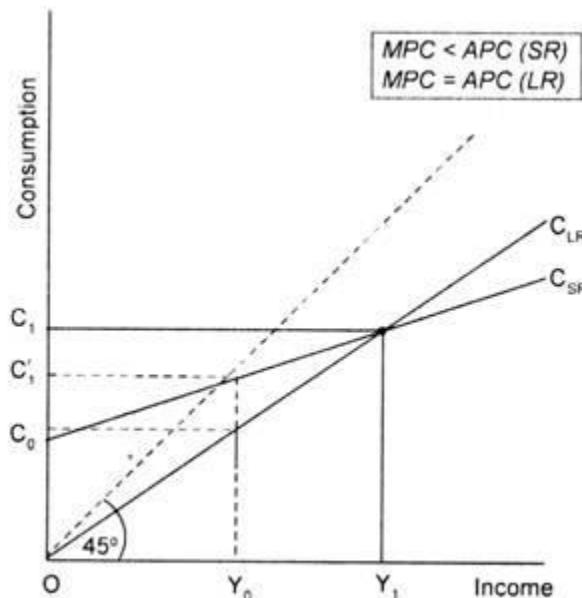


Fig. 3.39: Duesenberry's Consumption Function

As national income rises consumption grows along the long run consumption, CLR. Note that at income OY<sub>0</sub> aggregate consumption is OC<sub>0</sub>. As income increases to OY<sub>1</sub>, consumption rises to OC<sub>1</sub>. This means a constant APC consequent upon a steady growth of national income.

Now, let us assume that recession occurs leading to a fall in income level to OY<sub>0</sub> from the previously attained peak income of OY<sub>1</sub>. Duesenberry's second hypothesis now comes into operation: households will maintain the previous consumption level what they enjoyed at the past peak income level. That means, they hesitate in reducing their consumption standards along the CLR. Consumption will not decline to OC<sub>0</sub>, but to OC'<sub>1</sub> (> OC<sub>0</sub>) at income OY<sub>0</sub>. At this income level, APC will be higher than what it was at OY<sub>1</sub> and the MPC will be lower.

If income rises consequent upon economic recovery, consumption rises along CSR since people try to maintain their habitual or accustomed consumption standards influenced by previous peak income. Once OY<sub>1</sub> level of income is reached consumption would then move along CLR. Thus, the short run consumption is subject to what Duesenberry called 'the ratchet effect'. It ratchets up following an increase in income levels, but it does not fall back downward in response to income declines.

### 3. Permanent Income Hypothesis:

Another attempt to reconcile three sets of apparently contradictory data (cross-sectional data or budget studies data, cyclical or short run time-series data and Kuznets' long run time-series data) was made by Nobel prize winning Economist, Milton Friedman in 1957. Like Duesenberry's RIH, Friedman's hypothesis holds that the basic relationship between consumption and income is proportional.

But consumption, according to Friedman, depends neither on 'absolute' income, nor on 'relative' income but on 'permanent' income, based on expected future income. Thus, he finds a relationship between consumption and permanent income. His hypothesis is then described as the 'permanent income hypothesis' (henceforth PIH). In PIH, the relationship between permanent consumption and permanent income is shown.

Friedman divides the current measured income (i.e., income actually received) into two: permanent income ( $Y_p$ ) and transitory income ( $Y_t$ ). Thus,  $Y = Y_p + Y_t$ . Permanent income may be regarded as 'the mean income', determined by the expected or anticipated income to be received over a long period of time. On the other hand, transitory income consists of unexpected or unanticipated or windfall rise or fall in income (e.g., income received from lottery or race). Similarly, he distinguishes between permanent consumption ( $C_p$ ) and transitory consumption ( $C_t$ ). Transitory consumption may be regarded as the unanticipated spending (e.g., unexpected illness). Thus, measured consumption is the sum of permanent and transitory components of consumption. That is,  $C = C_p + C_t$ .

Friedman's basic argument is that permanent consumption depends on permanent income. The basic relationship of PIH is that permanent consumption is proportional to permanent income that exhibits a fairly constant APC. That is,  $C_p = kY_p$  where  $k$  is constant and equal to APC and MPC.

While reaching the above conclusion, Friedman assumes that there is no correlation between  $Y_p$  and  $Y_t$ , between  $Y_t$  and  $C_t$  and between  $C_p$  and  $C_t$ . That is

$$RY_t \cdot Y_p = RY_t \cdot C_t = RC_t \cdot C_p = 0.$$

Since  $Y_t$  is uncorrected with  $Y_p$ , it then follows that a high (or low) permanent income is not correlated with a high (or low) transitory income. For the entire group of households from all income groups transitory incomes (both positive and negative) would cancel each other out so that average transitory income would be equal to zero. This is also true for transitory components of consumption. Thus, for all the families taken together the average transitory income and average transitory consumption are zero, that is,

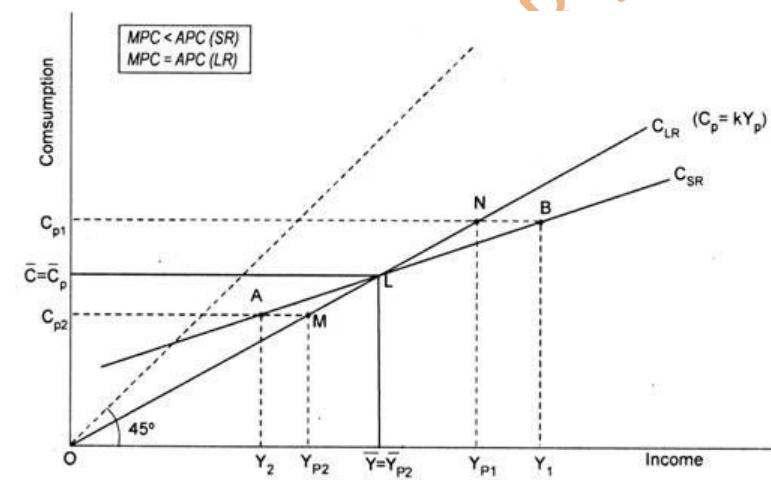
$$Y_t = C_t = 0 \text{ where } Y \text{ and } C \text{ are the average values. Now it follows that}$$

$$Y = Y_p \text{ and } C = C_p$$

Let us consider some families, rather than the average of all families, with above-average measured incomes. This happens because these families had enjoyed unexpected incomes thereby making transitory incomes positive and  $Y_p < Y$ . Similarly, for a sample of families with below-average measured income, transitory incomes become negative and  $Y_p > Y$ .

Now, we are in a position to resolve the apparent conflict between the cross-section and the long run time-series data to show a stable permanent relationship between permanent consumption and permanent income.

The line  $C_p = kY_p$  in Fig 3.40 shows the proportional relationship between permanent consumption and permanent income. This line cuts the CSR line at point L that corresponds to the average measured income of the population at which  $Y_t = 0$ . This average measured income produces average measured and permanent consumption,  $C_p$ .



Let us first consider a sample group of population having an average income above the population average. For this population group, transitory income is positive. The horizontal difference between the short run and long run consumption functions (points N and B and points M and A) describes the transitory income. Measured income equals permanent income at that point at which these two consumption functions intersect, i.e., point L in the figure where transitory income is zero.

For a sample group with average income above the national average measured income ( $Y_1$ ) exceeds permanent income ( $Y_p1$ ). At ( $C_p1$ ) level of consumption (i.e., point B) average measured income for this sample group exceeds permanent income,  $Y_p1$ . This group thus now has a positive average transitory income.

Next, we consider another sample group of population whose average measured income is less than the national average. For this sample group, transitory income component is negative. At Cp2 level of consumption (i.e., point A lying on the CSR) average measured income falls short of permanent income, Yp2. Now joining points A and B we obtain a cross-section consumption function, labelled as CSR. This consumption function gives an MPC that has a value less than long run proportional consumption function, Cp = kYp. Thus, in the short run, Friedman's hypothesis yields a consumption function similar to the Keynesian one, that is, MPC < APC.

However, over time as the economy grows transitory components reduce to zero for the society as a whole. So the measured consumption and measured income values are permanent consumption and permanent income. By joining points M, L and N we obtain a long run proportional consumption function that relates permanent consumption with the permanent income. On this line, APC is fairly constant, that is, APC = MPC.

### DEMAND FOR MONEY

Demand for money means demand for holding cash.

Unlike demand for consumer goods, money is not demanded for its own sake.

#### Money performs two important functions:

(i) Medium of exchange

(ii) Store of value

It is due to these two functions that money is considered as indispensable by the society. Therefore, demand for money is a derived demand. Demand for money is a very crucial concept as the value of money depends on the demand for money. There are different concepts of the demand for money.

#### Classical View:

I. The Classical economists viewed that money does not have any inherent utility of its own but is demanded for transaction motive. Money serves as a medium of exchange. Irving Fisher's version of the quantity theory of money which he developed in his book "Purchasing Power of Money" is the most famous version and represents the Classical approach to the analysis of the relationship between the quantity of money and the price level.

$$MV = PT \dots (1) \quad \text{where } M \rightarrow \text{Total quantity of money in circulation}$$

MV  $\Rightarrow$  Money supply      P  $\rightarrow$  Price level

PT  $\Rightarrow$  Demand for Money      V  $\rightarrow$  Transaction velocity of Money

T  $\rightarrow$  Total volume of transaction of goods and services  
during a given period.

With V and T remaining constant, P changes proportionately to the changes in M, such that if M is doubled, P is also doubled but the value of money is halved.

#### Limitations:

1. It does not explain how a change in M changes P
2. P is regarded as a passive factor which is unrealistic
3. Not only M determines P but also P determines M.

#### Neo-Classical Theory/Cambridge Version:

II. According to the neo-classical theory given by Marshall, Pigou, etc., money does not serve only as a medium of exchange but also as a store of value. The price level is affected only by that part of money which people

hold in form of cash for transaction purpose and not by MV as suggested by the Classical theory. The theory assumes that the demand for real balances is proportional to the income level.

$$(M/P)^d = kY \dots(2)$$

$Y \rightarrow$  Real National income

$(M/P)^d \rightarrow$  Demand for real balances

$k \rightarrow$  is constant. It shows the proportion of money income held by public in form of currency and bank deposits.

#### **Limitation:**

Although the Cambridge version links the demand for money to the money income, and recognizes that the other variables like rate of interest influences the value of  $k$ , it failed to incorporate it systematically in the analysis. The most sadly neglected part of pre-Keynesian analysis is the relationship between the asset demand for money and the interest rate.

#### **Keynesian Concept of Demand for Money/Liquidity Preference Theory of Demand for Money:**

III. Credit goes to Keynes for discussing the relationship between the interest rate and demand for real balances. He in his book "The General Theory of Employment and Money (1936)" uses a different term for demand for money and called it Liquidity Preference.

He does not disagree with the classical and neo-classical concept that money is demanded as a medium of exchange but he differs on the point that money is demanded only as a medium of exchange. Keynes viewed that money has a ready purchasing power and can be converted into any commodity when desired, then why to prefer liquidity or cash balance. The Neo-classical economists failed to recognize this.

#### **Keynes viewed that money is demanded due to three main motives:**

##### **1. Transaction Motive (Lt):**

It is the demand for money to meet daily transactions. It depends directly on the level of income.

$$Lt = f(Y) \dots(3i)$$

##### **2. Precautionary motive (Lp):**

It is the demand for money for meeting future contingencies. This depends directly on the level of income.

$$Lp = f(Y) \dots(3ii)$$

Since both  $Lt$  and  $Lp$  depend directly on the income level, Keynes called it as  $L1$ .

$$L1 = f(Y) \dots(3iii)$$

$L1$  is interest inelastic.

**IV. Speculative Motive (L2):** In a dynamic society there is no certainty regarding future. In such a situation, the store of value function is more important. This leads to speculative motive for hoarding money, a new approach discussed by Keynes.

It is termed as speculative motive because it depends on the hopes of gains and fears of loss in future. It relates to the desire to hold one's resources in liquid form in order to take advantage of the market movements regarding future change in the interest rate. The amount of money held for speculative motive will depend on the interest rate.

$$L2 = f(i) \dots(4)$$

$L2$  indirectly depends on  $i$

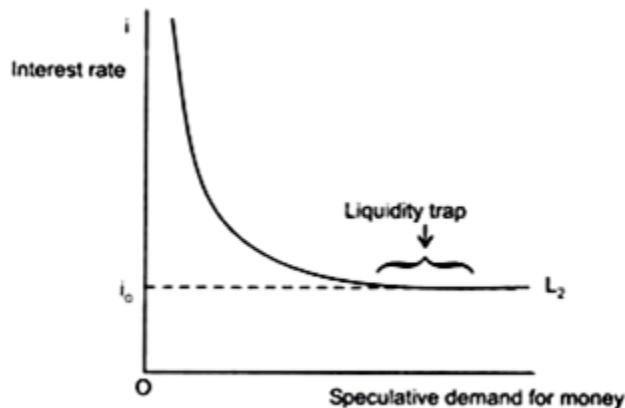


FIG. 21.1

$L_2$  curve shows an inverse relationship between  $L_2$  and the interest rate (Fig. 21.1).

Total demand for money ( $M/P)d$ :

Total demand for money is a function of both income level and the interest rate.

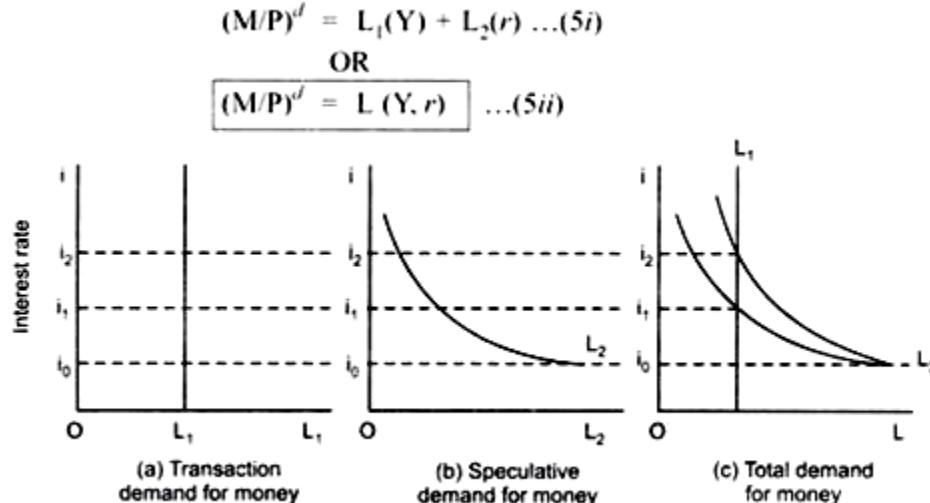


FIG. 21.2

$L_1$  is interest inelastic (Fig. 21.2a)

$L_2$  is inversely related to the interest rate (Fig. 21.2b)

$L$  is the total demand for money which is a horizontal summation of  $L_1$  and  $L_2$  (Fig. 21.2c)

#### Limitations:

Tobin criticized Keynesian view on demand for money, held for transaction and speculative motive.

1. Keynes viewed that  $L_1$  is interest inelastic but Tobin argued that when interest rate is very high, even in the short run, the demand for money starts responding. He explained this in his Portfolio theory of money demand.

2. Tobin criticized Keynes' view on speculative demand for money. According to Keynes, people will hold the asset either in form of money or bonds depending on the expectations regarding the future interest rate.

Tobin in his Portfolio Optimization theory showed that people will hold a combination of money and bonds which is based on uncertainty.

## **Quantity Theory of Money: Fisher's Transactions and Cambridge Cash Balance Approach**

### **1. Quantity Theory of Money: Fisher's Transactions Approach:**

The general level of prices is determined, that is, why at sometimes the general level of prices rises and sometimes it declines. Sometime back it was believed by the economists that the quantity of money in the economy is the prime cause of fluctuations in the price level.

The theory that increases in the quantity of money leads to the rise in the general price was effectively put forward by Irving Fisher. They believed that the greater the quantity of money, the higher the level of prices and vice versa.

Therefore, the theory which linked prices with the quantity of money came to be known as quantity theory of money. In the following analysis we shall first critically examine the quantity theory of money and then explain the modern view about the relationship between money and prices and also the determination of general level of prices.

The quantity theory of money seeks to explain the value of money in terms of changes in its quantity. Stated in its simplest form, the quantity theory of money says that the level of prices varies directly with quantity of money. "Double the quantity of money, and other things being equal, prices will be twice as high as before, and the value of money one-half. Halve the quantity of money and, other things being equal, prices will be one-half of what they were before and the value of money double."

The theory can also be stated in these words: The price level rises proportionately with a given increase in the quantity of money. Conversely, the price level falls proportionately with a given decrease in the quantity of money, other things remaining the same.

There are several forces that determine the value of money and the general price level.

### **The general price level in a community is influenced by the following factors:**

- (a) The volume of trade or transactions;
- (b) The quantity of money;
- (c) Velocity of circulation of money.

The first factor, the volume of trade or transactions, depends upon the supply or amount of goods and services to be exchanged. The greater the amount or supply of goods in an economy, the larger the number of transactions and trade, and vice versa.

But the classical and neoclassical economists who believed in the quantity theory of money assumed that full employment of all resources (including labour) prevailed in the economy. Resources being fully employed, the total output or supply of goods (and therefore the total trade or transactions) cannot increase. Therefore, those who believed in the quantity theory of money assumed that the total volume of trade or transactions remained the same.

The second factor in the determination of general level of prices is the quantity of money. It should be noted that the quantity of money in the economy consists of not only the notes and currency issued by the Government but also the amount of credit or deposits created by the banks.

The third factor influencing the price level is the velocity of circulation. A unit of money is used for exchange and transaction purposes not once but several times in a year. During several exchanges of goods and services, a unit of money passes from one hand to another.

Thus, if a single rupee is used five times in a year for exchange of goods and services, the velocity of circulation is 5. Hence, the velocity of money is the number of times a unit of money changes hands during exchanges in a year. The work done by one rupee which is circulated five times in a year is equal to that done by the five rupees which change hands only once each.

Let us illustrate the quantity theory of money. Suppose in a country there is only one good, wheat, which is to be exchanged. The total output of wheat is 2,000 quintals in a year. Further suppose that the government has issued money equal to Rs. 25,000 and no credit is issued by the banks. We further assume that one rupee is used four times in a year for exchange of wheat.

That is, velocity of circulation of money is four. Under these circumstances, 2,000 quintals of wheat are to be exchanged for Rs. 1, 00,000 ( $25,000 \times 4 = 1, 00,000$ ). The price of wheat will be  $1, 00,000/2,000 = \text{Rs. } 50$  per quintal. Suppose the quantity of money is doubled to Rs. 50,000, while the output of wheat remains at 2,000 quintals. As a result of this increase in the quantity of money, the price of wheat will rise to  $2, 00,000/2,000 = \text{Rs. } 100$  per quintal.

Thus with doubling of the quantity of money, the price has doubled. If the quantity of money is further increased to Rs. 75,000, the amount of wheat remaining constant, the price level will rise to  $3,00,000/2,000 = \text{Rs. } 150$  per quintal. It is thus clear that if the volume of transactions, i.e., output to be exchanged remains constant, the price level rises with the increase in the quantity of money.

### Fisher's Equation of Exchange:

An American economist, Irving Fisher, expressed the relationship between the quantity of money and the price level in the form of an equation, which is called 'the equation of exchange'.

This is:

$$PT = MV \dots (1)$$

$$\text{Or } P = MV/T$$

Where P stands for the average price level:

T stands for total amount of transactions (or total trade or amount of goods and services, raw materials, old goods etc.)

M stands for the quantity of money; and

V stands for the transactions velocity of circulation of money.

The equation (1) or (2) is an accounting identity and true by definition. This is, because  $MV$  which represents money spent on transactions must be equal to  $Pt$  which represents money received from transactions.

However, the equation of exchange as given in equations (1) and (2) has been converted into a theory of determination of general level of prices by the classical economists by making some assumptions. First, it has been assumed that the physical volume of transactions is constant because it is determined by a given amount of real resources, the given level of technology and the efficiency with which the given available resources are used.

These real factors determine a level of aggregate output which necessitates various types of transactions. Another crucial assumption is that transactions velocity of circulation (V) is also constant. The quantity theorists accordingly believed that velocity of circulation (V) depends on the methods and practices of factor payments such as frequency of wage payments to the workers, and habits of the people regarding spending their money incomes after they receive them.

Further, velocity of circulation of money also depends on the development of banking and credit system, that is, the ways and speed with which cheques are cleared, loans are granted and repaid. According to them, these practices do not change in the short run.

This assumption is very crucial for the quantity theory of money because when the quantity of money is increased this may cause a decline in velocity of circulation of money, then  $MV$  may not change if the decline in V offsets the increase in M. As a result, increase in M will not affect PY.

The quantity theorists believed that the volume of transactions (T) and the changes in it were largely independent of the quantity of money. Further, according to them, changes in velocity of circulation (V) and price level (P) do not cause any change in volume of transactions except tempo-rarily.

Thus classical economists who put forward the quantity theory of money believed that the number of transactions (which ultimately depends on aggregate real output) does not depend on other variables (M, V and P) in the equation of exchange. Thus we see that the assumption of constant V and T converts the equation of exchange ( $MV = PT$ ), which is an accounting identity, into a theory of the determination of general price level.

The quantity of money is fixed by the Government and the Central Bank of a country. Further, it is assumed that quantity of money in the economy depends upon the monetary system and policy of the central bank and the Government and is assumed to be autonomous of the real forces which determine the volume of transactions or national output.

Now, with the assumptions that M and V remain constant, the price level P depends upon the quantity of money M; the greater the quantity of M, the higher the level of prices. Let us give a numerical example.

Suppose the quantity of money is Rs. 5, 00,000 in an economy, the velocity of circulation of money (V) is 5; and the total output to be transacted (T) is 2, 50,000 units, the average price level (P) will be:

$$\begin{aligned} P &= MV/T \\ &= 5, 00,000 \times 5 / 2, 50,000 = 2,500,000 / 2, 50,000 \\ &= \text{Rs. 10 per unit.} \end{aligned}$$

If now, other things remaining the same, the quantity of money is doubled, i.e., increased to Rs. 10, 00,000 then:

$$P = 10, 00,000 \times 5 / 2, 50,000 = \text{Rs. 20 per unit}$$

We thus see that according to the quantity theory of money, price level varies in direct proportion to the quantity of money. A doubling of the quantity of money (M) will lead to the doubling of the price level. Further, since changes in the quantity of money are assumed to be independent or autonomous of the price level, the changes in the quantity of money become the cause of the changes in the price level.

#### **Quantity Theory of Money: Income Version:**

Fisher's transactions approach to quantity theory of money described in equation (1) and (2) above considers such variables as total volume of transaction (T) and average price level of these transactions are conceptually vague and difficult to measure.

Therefore, in later years quantity theory was formulated in income from which considers real income or national output (i.e., transactions of final goods only) rather than all transactions. As the data regarding national income or output is readily available, the income version of the quantity theory is being increasingly used. Moreover, the average price level of output is a more meaningful and useful concept.

Indeed, in actual practice, the general price level in a country is measured taking into account only the prices of final goods and services which constitute national product. It may be noted that even in this income version of the quantity theory of money, the function of money is considered to be a means of exchange as in the transactions approach of Fisher.

In this approach, the concept of income velocity of money has been used instead of transactions velocity of circulation. By income velocity we mean the average number of times per period a unit of money is used in making payments involving final goods and services, that is, national product or national income. In fact, income velocity of money is measured by  $Y/M$  where Y stands for real national income and M for the quantity of money.

**In view of the above, the income version of quantity theory of money is written as under:**

$MV = PY \dots (3)$

$P = MV/PY \dots (4)$

### Where

$M$  = Quantity of money

$V$  = Income velocity of money

$P$  = Average price level of final goods and services

$Y$  = Real national income (or aggregate output)

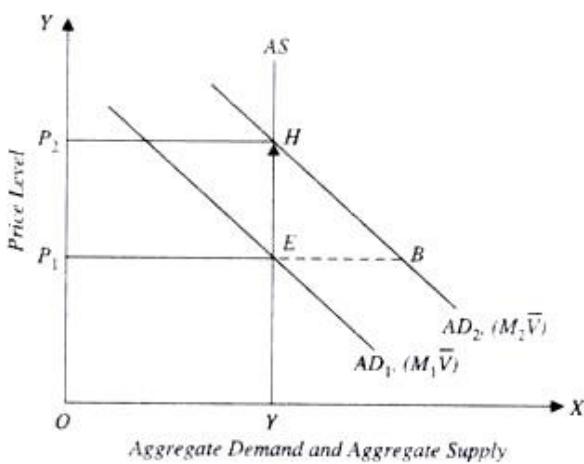


Fig. 20.1. Quantity Theory of Money

Like that in the transactions approach, in this new income version of the quantity theory also the different variables are assumed to be independent of each other. Further, income velocity of money ( $V$ ) and real income or aggregate output ( $Y$ ) is assumed to be given and constant during a short period.

More specifically, they do not vary in response to the changes in  $M$ . In fact, real income or output ( $Y$ ) is assumed to be determined by the real sector forces such as capital stock, the amount and skills of labour, technology etc. But as these factors are taken to be given and constant in the short run, and further full employment of the given resources is assumed to be prevailing due to the operation of Say's law and wage-price flexibility supply of output is taken to be inelastic and constant for purposes of determination of price level.

It follows from equations (3) and (4) above that with income velocity ( $V$ ) and national output ( $F$ ) remaining constant, price level ( $P$ ) is determined by the quantity of money ( $M$ ).

Classical quantity theory of money is illustrated in Fig. 20.1 through aggregate demand and aggregate supply model. It is worth noting that the quantity of money ( $A$ ) multiplied by the income velocity of circulation ( $V$ ), that is,  $MV$  gives us aggregate expenditure in the quantity theory of money. Now with a given quantity of money, say  $M_1$  and constant velocity of money  $V$ , we have a given amount of monetary expenditure ( $M_1 V$ ).

Given this aggregate expenditure, at a lower price level more quantities of goods can be purchased and at a higher price level, less quantities of goods can be purchased. Therefore, in accordance with classical quantity theory of money aggregate demand representing  $M_1$  slopes downward as shown by the aggregate demand curve  $AD_1$  in Fig. 20.1. If now the quantity of money is increased, say to  $M_2$ , aggregate demand curve representing new aggregate monetary expenditure  $M_2 V$  will shift upward.

As regards, aggregate supply curve, due to the assumption of wage-price flexibility, it is perfectly inelastic at full-employment level of output as is shown by the vertical aggregate supply curve  $AS$  in Fig. 20.1. Now, with a given quantity of money equal to  $M_1$ , aggregate demand curve  $AD_1$  cuts the aggregate supply curve  $AS$  at point  $E$  and determines price level  $OP_1$ .

Now, if the quantity of money is increased to M<sub>2</sub>, the aggregate demand curve shifts upward to AD<sub>2</sub>. It will be seen from Fig. 20.1 that with the increase in aggregate demand to AD<sub>2</sub> consequent to the expansion in money supply to M<sub>2</sub>, excess demand equal to EB emerges at the current price level OP<sub>1</sub>. This excess demand for goods and services will lead to the rise in price level to OP<sub>2</sub> at which again aggregate quantity demanded equals the aggregate supply which remains unchanged at OY due to the existence of full employment in the economy.

## 2. Quantity Theory of Money: The Cambridge Cash Balance Approach:

The equation of exchange has been stated by Cambridge economists, Marshall and Pigou, in a form different from Irving Fisher. Cambridge economists explained the determination of value of money in line with the determination of value in general.

Value of a commodity is determined by demand for and supply of it and likewise, according to them, the value of money (i.e., its purchasing power) is determined by the demand for and supply of money. As studied in cash-balance approach to demand for money Cambridge economists laid stress on the store of value function of money in sharp contrast to the medium of exchange function of money emphasised by in Fisher's transactions approach to demand for money.

According to cash balance approach, the public likes to hold a proportion of nominal income in the form of money (i.e., cash balances). Let us call this proportion of nominal income that people want to hold in money as k.

**Then cash balance approach can be written as:**

$$Md = kPY \dots (1)$$

Y = real national income (i.e., aggregate output)

P = the price level PY = nominal national income

k = the proportion of nominal income that people want to hold in money

Md = the amount of money which public want to hold

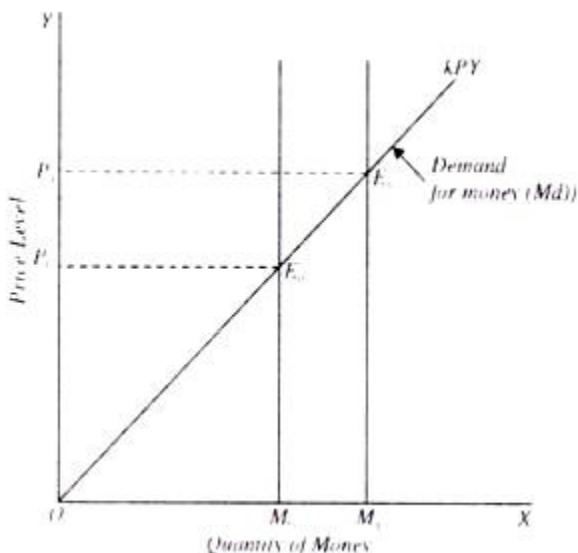
Now, for the achievement of money-market equilibrium, demand for money must equal worth the supply of money which we denote by M. It is important to note that the supply of money M is exogenously given and is determined by the monetary policies of the central bank of a country. Thus, for equilibrium in the money market.

$$M = Md$$

$$\text{As } Md = kPY$$

$$\text{Therefore, in equilibrium } M = kPY \dots (2)$$

Monetary equilibrium Cambridge cash balance approach is shown in Fig. 20.2 where demand for money is shown by a rising straight line kPY which indicates that with k and Y being held constant demand for money increases proportionately to the rise in price level. As price level rises people demand more money for transaction purposes.



**Fig. 20.2. Determination of Price Level : Cambridge Cash Balance Approach**

Now, if supply of money fixed by the Government (or the Central Bank) is equal to  $M_0$ , the demand for money  $APK$  equals the supply of money,  $M_0$  at price level  $P_0$ . Thus, with supply of money equal to  $M_0$  equilibrium price level  $P_0$  is determined. If money supply is increased, how the monetary equilibrium will change? Suppose money supply is increased to  $M_1$  at the initial price level  $P_0$  the people will be holding more money than they demand at it.

Therefore, they would want to reduce their money holding. In order to reduce their money holding they would increase their spending on goods and services. In response to the increase in money spending by the households the firms will increase prices of their goods and services.

As prices rise, the households will need and demand more money to hold for transaction purposes (i.e., for buying goods and services). It will be seen from Fig. 20.2 that with the increase in money supply to  $M_1$  new equilibrium between demand for money and supply of money is attained at point  $E_1$  on the demand for money curve  $kPY$  and price level has risen to  $P_1$ .

It is worth mentioning that  $k$  in the equations (1) and (2) is related to velocity of circulation of money  $V$  in Fisher's transactions approach. Thus, when a greater proportion of nominal income is held in the form of money (i.e., when  $k$  is higher),  $V$  falls. On the other hand, when less proportion of nominal income is held in money,  $K$  rises. In the words of Crowther, "The higher the proportion of their real incomes that people decide to keep in money, the lower will be the velocity of circulation, and vice versa."

It follows from above that  $k = 1/V$ . Now, rearranging equation (2) we have cash balance approach in which  $P$  appears as dependent variable. Thus, on rearranging equation (2) we have

$$P = 1/k \cdot M/Y \dots \dots \dots (3)$$

Like Fisher's equation, cash balance equation is also an accounting identity because  $k$  is defined as:

Quantity of Money Supply/National Income, that is,  $M/PY$

Now, Cambridge economists also assumed that  $k$  remains constant. Further, due to their belief that wage-price flexibility ensures full employment of resources, the level of real national income was also fixed corresponding to the level of aggregate output produced by full employment of resources.

Thus, from equation (3) it follows that with  $k$  and  $Y$  remaining constant price level ( $P$ ) is determined by the quantity of money ( $M$ ); changes in the quantity of money will cause proportionate changes in the price level.

Some economists have pointed out similarity between Cambridge cash-balance approach and

Fisher's transactions approach. According to them, k is reciprocal of V ( $k = 1/V$  or  $V = 1/k$ ). Thus in equation (2) if we replace k by , we have

$$M = 1/PY$$

$$\text{Or } MV = PY$$

Which is income version of Fisher's quantity theory of money? However, in spite of the formal similarity between the cash balance and transactions approaches, there are important conceptual differences between the two which makes cash balance approach superior to the transactions approach. First, as mentioned above.

Fisher's transactions approach lays stress on the medium of exchange function of money, that is, according to its people want money to use it as a means of payment for buying goods and services. On the other hand, cash balance approach emphasizes the store-of-value function of money. They hold money so that some value is stored for spending on goods and services after some lapse of time.

Further, in explaining the factors which determine velocity of circulation, transactions approach points to the mechanical aspects of payment methods and practices such as frequency of wages and other factor payments, the speed with which funds can be sent from one place to another, the extent to which bank deposits and cheques are used in dealing with others and so on.

On the other hand, k in the cash balance approach is behavioural in nature. Thus, according to Prof S.B. Gupta, "Cash- balance approach is behavioural in nature: it is build around the demand for money, however simple. Unlike Fisher's V, k is a behavioural ratio. As such it can easily lead to stress being placed on the relative usefulness of money as an asset."

Thirdly, cash balance approach explains determination of value of money in a framework of general demand-supply analysis of value. Thus, according to this approach value of money (that is, its purchasing power) is determined by the demand for and supply of money).

To sum up cash balance approach has made some improvements over Fisher's transactions approach in explaining the relation between money and prices. However it is essentially the same as the Fisher's transactions approach. Like Fisher's approach it considers substitution between money and commodities.

That is, if they decide to hold less money, they spend more on commodities rather than on other assets such as bonds, shares real property, and durable consumer goods. Further, like Fisher's transactions approach it visualises changes in the quantity of money causes proportional changes in the price level.

Like Fisher's approach, cash balance approach also assumes that full- employment of resources will prevail due to the wage-price flexibility. Hence, it also believes the aggregate supply curve as perfectly inelastic at full-employment level of output.

An important limitation of cash balance approach is that it also assumes that the proportion to income that people want to hold in money, that is, k, remains constant. Note that. In practice it has been found that proportionality factor k or- velocity of circulation has not remained constant but has been fluctuating, especially in the short run.

Besides, cash-balance approach falls short of considering demand for money as an asset. If demand for money as an asset were considered, it would have a determining influence on the rate of interest on which amount of investment in the economy depends. Investment plays an important role in the determination of/level of real income in the economy.

It was left to J.M. Keynes who later emphasised the role of demand for money as an asset which was one of the alternative assets in which individuals can keep their income or wealth. Finally, it may be mentioned that other criticisms of Fisher's transactions approach to quantity theory of money discussed above equally apply to the Cambridge cash balance approach.

#### **Keynes's Critique of the Quantity Theory of Money:**

The quantity theory of money has been widely criticised.

The following criticisms have been levelled against the quantity theory of money lay by Keynes and his followers:

### **1. Useless truism:**

With the qualification that velocity of money (V) and the total output (T) remain the same, the equation of exchange ( $MV = PT$ ) is a useless truism. The real trouble is that these things seldom remain the same. They change not only in the long run but also in a short period. Fisher's equation of exchange simply tells us that expenditure made on goods (MV) is equal to the value of output of goods and services sold (PT).

### **2. Velocity of money is not stable:**

Keynesian economists have challenged the assumption that velocity of money remains stable. According to them, velocity of money changes inversely with the change in money supply. They argue that increase in money supply, demand for money remaining constant, leads to the fall in the rate of interest.

At a lower rate of interest, people will be induced to hold more money as idle cash balances (under speculative motive). This means velocity of circulation of money will be reduced. Thus, if a decline in interest rate reduces velocity, then increase in the money supply will be offset by reduction in velocity, with the result that price level need not rise when money supply is increased.

### **3. Increase in quantity of money may not always lead to the increase in aggregate spending or demand:**

Further, according to Keynes' the quantity theory of money is based upon two more wrong assumptions.

Basically, for, the quantity theory to be true, the following two assumptions must hold:

- (i) An increase in money supply must lead to an increase in spending, that is, aggregate demand i.e., no part of additional money created should be kept in idle hoards.
- (ii) The resulting increase in spending or aggregate demand must face a totally inelastic out-put.

Both the assumptions according to Keynes, lack generality and, therefore, if either of them does not hold, the quantity theory cannot be accepted as a valid explanation of the changes in price level.

Let us take the first assumption. Under this assumption, the entire increase in the quantity of money must express itself in the form of increased spending. If spending does not increase, there is no question of a change in prices or output. But, is it valid to make such an assumption?

Obviously, there is no such direct link between the increase in the quantity of money and the increase in the volume of total spending or aggregate demand. No one is going to increase his expenditure simply because the government is printing more notes or the banks are more liberal in their lending policies. Thus, if the demand for money is highly interest-elastic, the increase in money supply will not lead to any appreciable fall in the rate of interest.

With no significant fall in rate of interest, the investment expenditure and expenditure on durable consumer goods will not increase much. As a result, increase in money supply may not lead to increase in expenditure or aggregate demand and therefore price level may remain unaffected.

This is not to say, however, that changes in the quantity of money have no influence whatso-ever on the volume of aggregate spending. As we shall show below, changes in the quantity of money are often capable of inducing changes in the volume of aggregate spending. What Keynes and his followers deny is the assertion that there exists a direct, simple, and more or less a proportional relation between variation in money supply and variation in the level of total spending.

### **4. Assumption of constant volume of transactions or constant level of aggregate output is not valid:**

Key asserted that the assumption of constant aggregate output valid only under conditions of full employment. It is only then that we can assume a totally inelastic supply of output, for all the available

resources are being already fully utilised. In conditions of less than full employment, the supply curve of output will be elastic.

Now, if we assume that aggregate spending or demand increases with an increase in the quantity of money, it does not follow that prices must necessarily rise. If the supply curve of output is fairly elastic, it is more likely that effect of an increase in spending will be more to raise production rather than prices.

Of course, at full-employment level every further increase in spending or aggregate demand must lead to the rise in the price level as output is inelastic in supply at full-employment level. Since full-employment cannot be assumed to be a normal affair, we cannot accept the quantity theory of money as a valid explanation of changes in the price level in the short run.

### Top 5 Theories of Demand for Money

Here we detail about the top five theories of demand for money.

**The theories are: (1) Fisher's Transactions Approach, (2) Keynes' Theory, (3) Tobin Portfolio Approach, (4) Boumol's Inventory Approach, and (5) Friedman's Theory.**

#### Theory 1# Fisher's Transactions Approach to Demand for Money:

In his theory of demand for money Fisher and other classical economists laid stress on the medium of exchange function of money, that is, money as a means of buying goods and services. All transactions involving purchase of goods, services, raw materials, assets require payment of money as value of the transaction made.

If accounting identity, namely value paid must equal value received is to occur, value of goods, services and assets sold must be equal to the value of money paid for them. Thus, in any given period, the value of all goods, services or assets sold must equal to the number of transactions  $T$  made multiplied by the average price of these transactions. Thus, the total value of transactions made is equal to  $PT$ .

On the other hand, because value paid is identically equal to the value of money flow used for buying goods, services and assets, the value of money flow is equal to the nominal quantity of money supply  $M$  multiplied by the average number of times the quantity of money in circulation is used or exchanged for transaction purposes. The average number of times a unit of money is used for transactions of goods, services and assets is called transactions velocity of circulation and is denoted by  $V$ .

Symbolically, Fisher's equation of exchange is written as under:

$$MV = PT \dots(1)$$

Where,  $M$  = the quantity of money in circulation

$V$  = transactions velocity of circulation

$P$  = Average price

$T$  = the total number of transactions.

The above equation (1) is an identity, that is true by definition. However by taking some assumptions about the variables  $V$  and  $T$ , Fisher transformed the above identity into a theory of demand for money.

According to Fisher, the nominal quantity of money  $M$  is fixed by the Central Bank of a country (note that Reserve Bank of India is the Central Bank of India) and is therefore treated as an exogenous variable which is assumed to be a given quantity in a particular period of time.

Further, the number of transactions in a period is a function of national income; the greater the national income, the larger the number of transactions required to be made. Further, since Fisher assumed that full employment of resources prevailed in the economy, the level of national income is determined by the amount of the fully employed resources.

Thus, with the assumption of full employment of resources, the volume of transactions T is fixed in the short run. But most important assumption which makes Fisher's equation of exchange as a theory of demand for money is that velocity of circulation (V) remains constant and is independent of M, P and T.

This is because he thought that velocity of circulation of money (V) is determined by institutional and technological factors involved in the transactions process. Since these institutional and technological factors do not vary much in the short run, the transactions velocity of circulation of money (V) was assumed to be constant.

As we know that for money market to be in equilibrium, nominal quantity of money supply must be equal to the nominal quantity of money demand.

**In other words, for money market to be in equilibrium:**

$$M_s = M_d$$

where  $M_s$  is fixed by the Central Bank of a country.

With the above assumptions, Fisher's equation of exchange in (1) above can be rewritten as

$$M_d = PT/V$$

$$\text{or } M_d = 1/V \cdot PT \dots (2)$$

Thus, according to Fisher's transactions approach, demand for money depends on the following three factors:

- (1) The number of transactions (T)
- (2) The average price of transactions (P)
- (3) The transaction velocity of circulation of money

It has been pointed out that Fisher's transactions approach represents some kind of a mechanical relation between demand for money ( $M_d$ ) and the total value of transactions (PT). Thus Prof. Suraj Bhan Gupta says that in Fisher's approach the relation between demand for money  $M_d$  and the value of transactions (PT) "betrays some kind of a mechanical relation between it (i.e. PT) and  $M_d$  as PT represents the total amount of work to be done by money as a medium of exchange. This makes demand for money ( $M_d$ ) a technical requirement and not a behavioural function".

In Fisher's transactions approach to demand for money some serious problems are faced when it is used for empirical research. First, in Fisher's transactions approach, not only transactions involving current production of goods and services are included but also those which arise in sales and purchase of capital assets such as securities, shares, land etc. Due to frequent changes in the values of these capital assets, it is not appropriate to assume that T will remain constant even if Y is taken to be constant due to full-employment assumption.

The second problem which is faced in Fisher's approach is that it is difficult to define and determine a general price level that covers not only goods and services currently produced but also capital assets just mentioned above.

**The Cambridge Cash Balance Theory of Demand for Money:**

Cambridge Cash Balance theory of demand for money was put forward by Cambridge economists, Marshall and Pigou. This Cash Balance theory of demand for money differs from Fisher's transactions approach in that it places emphasis on the function of money as a store of value or wealth instead of Fisher's emphasis on the use of money as a medium of exchange.

It is worth noting that the exchange function of money eliminates the need to barter and solves the problem of double coincidence of wants faced in the barter system. On the other hand, the function of money as a store of value lays stress on holding money as a general purchasing power by individuals over a period of time between the sale of a good or service and subsequent purchase of a good or service at a later date.

Marshall and Pigou focused their analysis on the factors that determine individual demand for holding cash balances. Although they recognized that current interest rate, wealth owned by the individuals, expectations of future prices and future rate of interest determine the demand for money, they however believed that changes in these factors remain constant or they are proportional to changes in individuals' income.

Thus, they put forward a view that individual's demand for cash balances (i.e. nominal money balances) is proportional to the nominal income (i.e. money income).

Thus, according to their approach, aggregate demand for money can be expressed as:

$$Md = kPY$$

Where, Y = real national income

P = average price level of currently produced goods and services

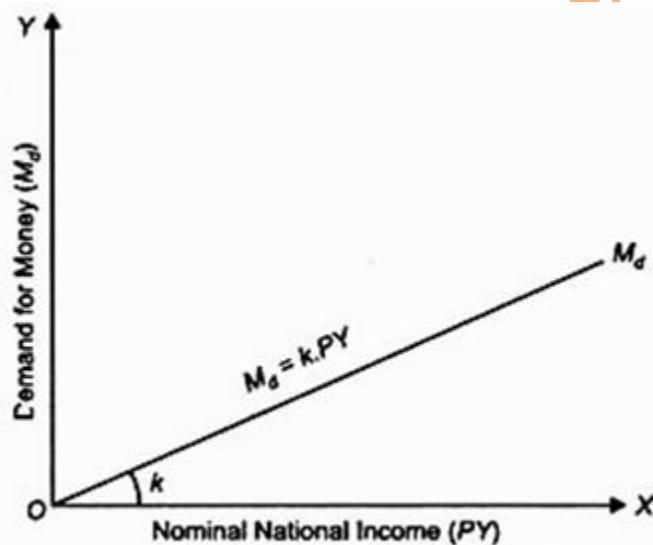
PY = nominal income

k = proportion of nominal income (PY) that people want to hold as cash balances

Cambridge Cash balance approach to demand for money is illustrated in Fig. 15.1 where on the X-axis we measure nominal national income (PY) and on the F-axis the demand for money (Md). It will be seen from Fig. 15.1 that demand for money (Md) in this Cambridge Cash Balance Approach

is a linear function of nominal income. The slope of the function is equal to k, that is,  $k = Md/PY$ . Thus important feature of Cash balance approach is that it makes the demand for money as function of money income alone.

A merit of this formulation is that it makes the relation between demand for money and income as behavioural in sharp contrast to Fisher's approach in which demand for money was related to total transactions in a mechanical manner.



**Fig. 15.1. Demand for Money : Cambridge Cash Balance Approach.**

Although, Cambridge economists recognized the role of other factors such as rate of interest, wealth as the factors which play a part in the determination of demand for money but these factors were not systematically and formally incorporated into their analysis of demand for money.

In their approach, these other factors determine the proportionality factor k, that is, the proportion of money income that people want to hold in the form of money, i.e. cash balances. It was J.M. Keynes who later

emphasized the role of these other factors such as rate of interest, expectations regarding future interest rate and prices and formally incorporated them explicitly in his analysis of demand for money.

Thus, Glahe rightly writes, "Cambridge approach is conceptually richer than the transactions approach, the former is incomplete because it does not formally incorporate the influence of economic variables just mentioned on the demand for cash balances... John Maynard Keynes first attempted to eliminate this shortcoming."

Another important feature of Cambridge demand for money function is that the demand for money is proportional function of nominal income ( $M_d = kPY$ ). Thus, it is proportional function of both price level (P) and real income (Y). This implies two things. First, income elasticity of demand for money is unity and, secondly, price elasticity of demand for money is also equal to unity so that any change in the price level causes equal proportionate change in the demand for money.

#### **Criticism:**

It has been pointed out by critics that other influences such as rate of interest, wealth, expectations regarding future prices have not been formally introduced into the Cambridge theory of the demand for cash balances. These other influences remain in the background of the theory. "It was left to Keynes, another Cambridge economist, to highlight the influence of the rate of interest on the demand for money and change the course of monetary theory."

Another criticism leveled against this theory is that income elasticity of demand for money may well be different from unity. Cambridge economists did not provide any theoretical reason for its being equal to unity. Nor is there any empirical evidence supporting unitary income elasticity of demand for money.

Besides, price elasticity of demand is also not necessarily equal to unity. In fact, changes in the price level may cause non-proportional changes in the demand for money. However, these criticisms are against the mathematical formulation of cash balance approach, namely,  $M_d = kPY$ .

They do not deny the important relation between demand for money and the level of income. Empirical studies conducted so far point to a strong evidence that there is a significant and firm relation between demand for money and level of income.

#### **Theory 2# Keynes' Theory of Demand for Money:**

In his well-known book, Keynes propounded a theory of demand for money which occupies an important place in his monetary theory. It is also worth noting that for demand for money to hold Keynes used the term what he called liquidity preference. How much of his income or resources will a person hold in the form of ready money (cash or non-interest-paying bank deposits) and how much will he part with or lend depends upon what Keynes calls his "liquidity preference." Liquidity preference means the demand for money to hold or the desire of the public to hold cash.

#### **Demand for Money or Motives for Liquidity Preference: Keynes' Theory:**

Liquidity preference of a particular individual depends upon several considerations. The question is: Why should the people hold their resources liquid or in the form of ready money when they can get interest by lending money or buying bonds?

The desire for liquidity arises because of three motives:

- (i) The transactions motive,
- (ii) The precautionary motive, and
- (iii) The speculative motive.

#### **1. The Transactions Demand for Money:**

The transactions motive relates to the demand for money or the need for money balances for the current transactions of individuals and business firms. Individuals hold cash in order "to bridge the interval between

the receipt of income and its expenditure". In other words, people hold money or cash balances for transaction purposes, because receipt of money and payments do not coincide.

Most of the people receive their incomes weekly or monthly while the expenditure goes on day by day. A certain amount of ready money, therefore, is kept in hand to make current payments. This amount will depend upon the size of the individual's income, the interval at which the income is received and the methods of payments prevailing in the society.

The businessmen and the entrepreneurs also have to keep a proportion of their resources in money form in order to meet daily needs of various kinds. They need money all the time in order to pay for raw materials and transport, to pay wages and salaries and to meet all other current expenses incurred by any business firm.

It is clear that the amount of money held under this business motive will depend to a very large extent on the turnover (i.e., the volume of trade of the firm in question). The larger the turnover, the larger, in general, will be the amount of money needed to cover current expenses. It is worth noting that money demand for transactions motive arises primarily because of the use of money as a medium of exchange (i.e. means of payment).

Since the transactions demand for money arises because individuals have to incur expenditure on goods and services during the receipt of income and its use of payment for goods and services, money held for this motive depends upon the level of income of an individual.

A poor man will hold less money for transactions motive as he spends less because of his small income. On the other hand, a rich man will tend to hold more money for transactions motive as his expenditure will be relatively greater.

The demand for money is a demand for real cash balances because people hold money for the purpose of buying goods and services. The higher the price level, the more money balances a person has to hold in order to purchase a given quantity of goods. If the price level doubles, then the individual has to keep twice the amount of money balances in order to be able to buy the same quantity of goods. Thus the demand for money balances is demand for real rather than nominal balances.

**According to Keynes**, the transactions demand for money depends only on the real income and is not influenced by the rate of interest. However, in recent years, it has been observed empirically and also according to the theories of Tobin and Baumol transactions demand for money also depends on the rate of interest.

This can be explained in terms of opportunity cost of money holdings. Holding one's asset in the form of money balances has an opportunity cost. The cost of holding money balances is the interest that is foregone by holding money balances rather than other assets. The higher the interest rate, the greater the opportunity cost of holding money rather than non-money assets.

Individuals and business firms economies on their holding of money balances by carefully managing their money balances through transfer of money into bonds or short-term income yielding non-money assets. Thus, at higher interest rates, individuals and business firms will keep less money holdings at each level of income.

## 2. Precautionary Demand for Money:

Precautionary motive for holding money refers to the desire of the people to hold cash balances for unforeseen contingencies. People hold a certain amount of money to provide for the danger of unemployment, sickness, accidents, and the other uncertain perils. The amount of money demanded for this motive will depend on the psychology of the individual and the conditions in which he lives.

## 3. Speculative Demand for Money:

The speculative motive of the people relates to the desire to hold one's resources in liquid form in order to take advantage of market movements regarding the future changes in the rate of interest (or bond prices). The notion of holding money for speculative motive was a new and revolutionary Keynesian idea. Money held

under the speculative motive serves as a store of value as money held under the precautionary motive does. But it is a store of money meant for a different purpose.

The cash held under this motive is used to make speculative gains by dealing in bonds whose prices fluctuate. If bond prices are expected to rise which, in other words, means that the rate of interest is expected to fall, businessmen will buy bonds to sell when their prices actually rise. If, however, bond prices are expected to fall, i.e., the rate of interest is expected to rise, businessmen will sell bonds to avoid capital losses.

Nothing is certain in the dynamic world, where guesses about the future course of events are made on precarious basis, businessmen keep cash to speculate on the probable future changes in bond prices (or the rate of interest) with a view to making profits.

Given the expectations about the changes in the rate of interest in future, less money will be held under the speculative motive at a higher current rate of interest and more money will be held under this motive at a lower current rate of interest.

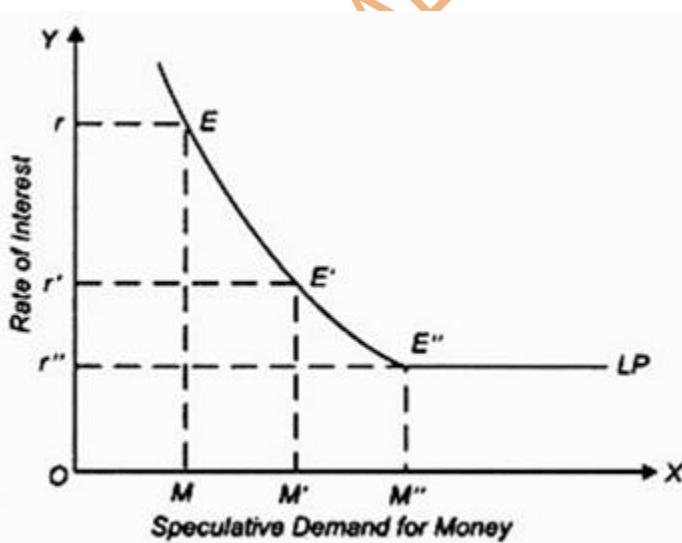
The reason for this inverse correlation between money held for speculative motive and the prevailing rate of interest is that at a lower rate of interest less is lost by not lending money or investing it, that is, by holding on to money, while at a higher current rate of interest holders of cash balance would lose more by not lending or investing.

Thus the demand for money under speculative motive is a function of the current rate of interest, increasing as the interest rate falls and decreasing as the interest rate rises. Thus, demand for money under this motive is a decreasing function of the rate of interest. This is shown in Fig. 15.2. Along X-axis we represent the speculative demand for money and along y-axis the current rate of interest.

The liquidity preference curve LP is downward sloping towards the right signifying that the higher the rate of interest, the lower the demand for money for speculative

motive, and vice versa. Thus at the high current rate of interest  $O_r$ , a very small amount  $OM$  is held for speculative motive.

This is because at a high current rate of interest more money would have been lent out or used for buying bonds and therefore less money would be kept as inactive balances. If the rate of interest falls to  $O_r'$ , then a greater amount of money  $OM'$  is held under speculative motive. With the further fall in the rate of interest to  $O_r''$ , money held under speculative motive increases to  $OM''$ .



**Fig. 15.2. Liquidity Preference Curve and Liquidity Trap.**

**Liquidity Trap:**

It will be seen from Fig. 15.2 that the liquidity preference curve LP becomes quite flat i.e., perfectly elastic at a very low rate of interest; it is horizontal line beyond point E" towards the right. This perfectly elastic portion of liquidity preference curve indicates the position of absolute liquidity preference of the people. That is, at a very low rate of interest people will hold with them as inactive balances any amount of money they come to have.

This portion of liquidity preference curve with absolute liquidity preference is called liquidity trap by the economists because expansion in money supply gets trapped in the sphere of liquidity trap and therefore cannot affect rate of interest and therefore the level of investment. According to Keynes, it is because of the existence of liquidity trap that monetary policy becomes ineffective to tide over economic depression.

But the demand for money to satisfy the speculative motive does not depend so much upon what the current rate of interest is, as on expectations about changes in the rate of interest. If there is a change in the expectations regarding the future rate of interest, the whole curve of demand for money or liquidity preference for speculative motive will change accordingly.

Thus, if the public on balance expect the rate of interest to be higher (i.e., bond prices to be lower) in the future than had been previously supposed, the speculative demand for money will increase and the whole liquidity preference curve for speculative motive will shift upward.

#### **Aggregate Demand for Money: Keynes' View:**

If the total demand of money is represented by  $M_d$  we may refer to that part of  $M$  held for transactions and precautionary motive as  $M_1$  and to that part held for the speculative motive as  $M_2$ . Thus  $M_d = M_1 + M_2$ . According to Keynes, the money held under the transactions and precautionary motives, i.e.,  $M_1$ , is completely interest-inelastic unless the interest rate is very high.

The amount of money held as  $M_1$ , that is, for transactions and precautionary motives, is mainly a function of the size of income and business transactions together with the contingencies growing out of the conduct of personal and business affairs.

We can write this in a functional form as follows:

$$M_1 = L_1(Y) \dots (i)$$

Where  $Y$  stands for income,  $L_1$  for demand function, and  $M_1$  for money demanded or held under the transactions and precautionary motives. The above function implies that money held under the transactions and precautionary motives is a function of income.

On the other hand, according to Keynes, money demanded for speculative motive, i.e.,  $M_2$  as explained above, is primarily a function of the rate of interest.

***This can be written as:***

$$M_2 = L_2(r) \dots (ii)$$

Where  $r$  stands for the rate of interest,  $L_2$  for demand function for speculative motive.

Since total demand of money  $M_d = M_1 + M_2$ , we get from (i) and (ii) above

$$M_d = L_1(Y) + L_2(r)$$

Thus, according to Keynes' theory of total demand for money is an additive demand function with two separate components. The one component,  $L_1(Y)$  represents the transactions demand for money arising out of transactions and precautionary motives is an increasing function of the level of money income. The second component of the demand for money, that is,  $L_2(r)$  represents the speculative demand for money, which depends upon rate of interest, is a decreasing function of the rate of interest.

#### **Critique of Keynes' Theory:**

By introducing speculative demand for money, Keynes made a significant departure from the classical theory of money demand which emphasized only the transactions demand for money. However, as seen above, Keynes' theory of speculative demand for money has been challenged.

The main drawback of Keynes' speculative demand for money is that it visualizes that people hold their assets in either all money or all bonds. This seems quite unrealistic as individuals hold their financial wealth in some combination of both money and bonds. This gave rise to portfolio approach to demand for money put forward by Tobin, Baumol and Friedman.

The portfolio of wealth consists of money, interest-bearing bonds, shares, physical assets etc. Further, while according to Keynes' theory, demand for money for transaction purposes is insensitive to interest rate, the modern theories of money demand put forward by Baumol and Tobin show that money held for transaction purposes is interest elastic.

Further, Keynes' additive form of demand for money function, namely,  $M_d = L_1(Y) + L_2(r)$  has now been rejected by the modern economists. It has been pointed out that money represents a single asset, and not the several ones. There may be more than one motive to hold money but the same units of money can serve several motives. Therefore, the demand for money cannot be divided into two or more different departments independent of each other.

Further, as has been argued by Tobin and Baumol, the transactions demand for money also depends upon the rate of interest. Others have explained that speculative demand for money is an increasing function of the total assets or wealth. If income is taken as a proxy for total wealth then even speculative demand for money will depend upon the size of income, apart from the rate of interest.

In view of all these arguments, the Keynesian total demand for money function is written in the following modified form:

$$M_d = L(Y, r)$$

where it is conceived that demand for money function ( $M_d$ ) is increasing function of the level of income, it is a decreasing function of the rate of interest. The presentation of the demand for money function in the above revised and modified form,  $M_d = L(Y, r)$  has been a highly significant development in monetary theory.

### Theory 3# Tobin's Portfolio Approach to Demand for Money:

American economist James Tobin, in his important contribution, explained that rational behaviour on the part of the individuals is that they should keep a portfolio of assets which consists of both bonds and money. In his analysis he makes a valid assumption that people prefer more wealth to less. According to him, an investor is faced with a problem of what proportion of his portfolio of financial assets he should keep in the form of money (which earns no interest) and interest-bearing bonds.

The portfolio of individuals may also consist of more risky assets such as shares. According to Tobin, faced with various safe and risky assets, individuals diversify their portfolio by holding a balanced combination of safe and risky assets. He points out that individual's behaviour shows risk aversion. That is, they prefer less risk to more risk at a given rate of return. In Keynes' analysis an individual holds his wealth in either all money or all bonds depending upon his estimate of the future rate of interest. But, according to Tobin, individuals are uncertain about future rate of interest.

If a wealth holder chooses to hold a greater proportion of risky assets such as bonds in his portfolio, he will be earning a high average return but will bear a higher degree of risk. Tobin argues that a risk averter will not opt for such a portfolio with all risky bonds or a greater proportion of them.

On the other hand, a person who, in his portfolio of wealth, holds only safe and riskless assets such as money (in the form of currency and demand deposits in banks) he will be taking almost zero risk but will also be having no return and as a result there will be no growth of his wealth. Therefore, people generally prefer a mixed diversified portfolio of money, bonds and shares, with each person opting for a little different balance between riskiness and return.

It is important to note that a person will be unwilling to hold all risky assets such as bonds unless he obtains a higher average return on them. In view of the desire of individuals to have both safety and reasonable return,

they strike a balance between them and hold a mixed and balanced portfolio consisting of money (which is a safe and riskless asset) and risky assets such as bonds and shares though this balance or mix varies between various individuals depending on their attitude towards risk and hence their trade-off between risk and return.

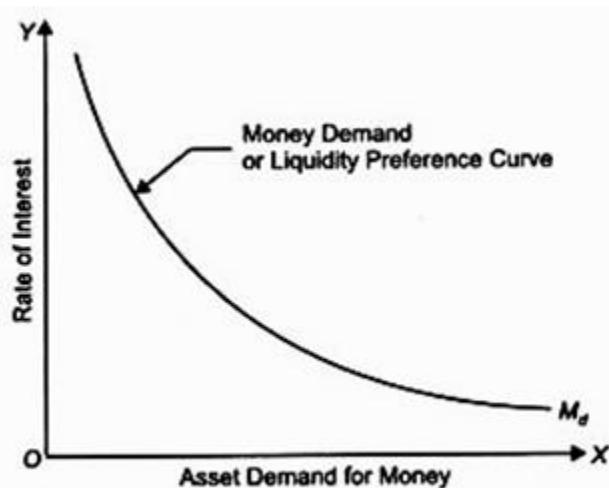
#### Tobin's Liquidity Preference Function:

Tobin derived his liquidity preference function depicting relationship between rate of interest and demand for money (that is, preference for holding wealth in money form which is a safe and "riskless" asset). He argues that with the increase in the rate of interest (i.e. rate of return on bonds), wealth holders will be generally attracted to hold a greater fraction of their wealth in bonds and thus reduce their holding of money.

That is, at a higher rate of interest, their demand for holding money (i.e., liquidity) will be less and therefore they will hold more bonds in their portfolio. On the other hand, at a lower rate of interest they will hold more money and less bonds in their portfolio. This means, like Keynes' speculative demand for money, in Tobin's portfolio approach demand function for money as an asset (i.e. his liquidity preference function curve) slopes downwards as is shown in Fig. 15.3, where on the horizontal axis asset demand for money is shown.

This downward-sloping liquidity preference function curve shows that the asset demand for money in the portfolio increases as the rate of interest on bonds falls. In this way Tobin derives the aggregate liquidity preference curve by determining the effects of changes in interest rate on the asset demand for money in the portfolio of individuals. Tobin's liquidity preference theory has been found to be true by the empirical studies conducted to measure interest elasticity of the demand for money.

As shown by Tobin through his portfolio approach, these empirical studies reveal that aggregate liquidity preference curve is negatively sloped. This means that most of the people in the economy have liquidity preference function similar to the one shown by curve  $M_d$  in Fig. 15.3.



**Fig. 15.3. Tobin's Liquidity Preference Curve.**

#### Evaluation:

Tobin's approach has done away with the limitation of Keynes' theory of liquidity preference for speculative motive, namely, individuals hold their wealth in either all money or all bonds. Thus, Tobin's approach, according to which individuals simultaneously hold both money and bonds but in different proportion at different rates of interest, yields a continuous liquidity preference curve.

Further, Tobin's analysis of simultaneous holding of money and bonds is not based on the erroneous Keynes' assumption that interest rate will move only in one direction but on a simple fact that individuals do not know with certainty which way the interest rate will change.

It is worth mentioning that Tobin's portfolio approach, according to which liquidity preference (i.e. demand for money) is determined by the individual attitude towards risk, can be extended to the problem of asset choice when there are several alternative assets, not just two, of money and bonds.

#### Theory 4# Baumol's Inventory Approach to Transactions Demand for Money:

Instead of Keynes' speculative demand for money, Baumol concentrated on transactions demand for money and put forward a new approach to explain it. Baumol explains the transactions demand for money from the viewpoint of the inventory control or inventory management similar to the inventory management of goods and materials by business firms.

As businessmen keep inventories of goods and materials to facilitate transactions or exchange in the context of changes in demand for them, Baumol asserts that individuals also hold inventory of money because this facilitates transactions (i.e. purchases) of goods and services.

In view of the cost incurred on holding inventories of goods there is need for keeping optimal inventory of goods to reduce cost. Similarly, individuals have to keep optimum inventory of money for transactions purposes. Individuals also incur cost when they hold inventories of money for transaction purposes.

They incur cost on these inventories as they have to forgo interest which they could have earned if they had kept their wealth in saving deposits or fixed deposits or invested in bonds. This interest income forgone is the cost of holding money for transaction purposes. In this way Baumol and Tobin emphasised that transaction demand for money is not independent of the rate of interest.

It may be noted that by money we mean currency and demand deposits which are quite safe and riskless but carry no interest. On the other hand, bonds yield interest or return but are risky and may involve capital loss if wealth holders invest in them. However, saving deposits in banks, according to Baumol, are quite free from risk and also yield some interest.

Therefore, Baumol asks the question why an individual holds money (i.e. currency and demand deposits) instead of keeping his wealth in saving deposits which are quite safe and earn some interest as well. According to him, it is for convenience and capability of it being easily used for transactions of goods that people hold money with them in preference to the saving deposits.

Unlike Keynes both Baumol and Tobin argue that transactions demand for money depends on the rate of interest. People hold money for transaction purposes "to bridge the gap between the receipt of income and its spending." As interest rate on saving deposits goes up people will tend to shift a part of their money holdings to the interest-bearing saving deposits.

Individuals compare the costs and benefits of funds in the form of money with the interest-bearing saving deposits. According to Baumol, the cost which people incur when they hold funds in money is the opportunity cost of these funds, that is, interest income forgone by not putting them in saving deposits.

#### Baumol's Analysis of Transactions Demand:

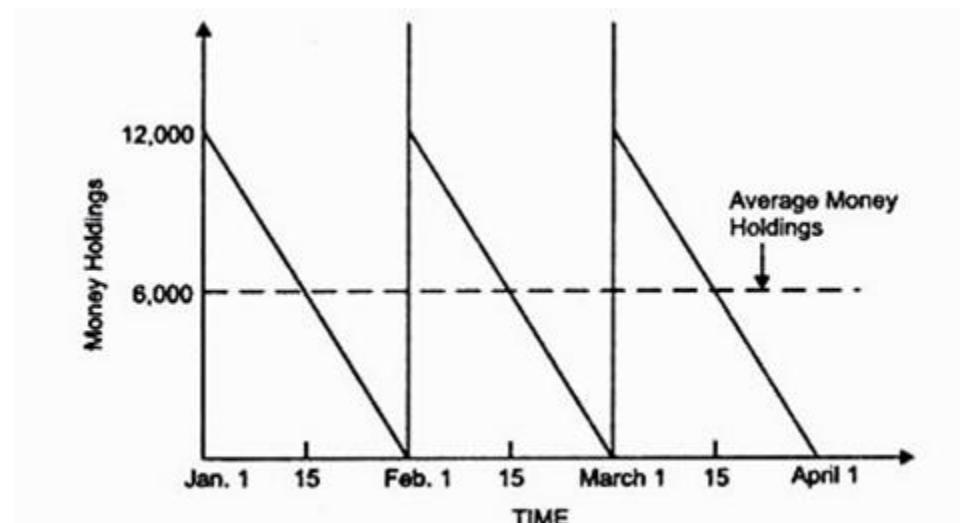
Baumol analyses the transactions demand for money of an individual who receives income at a specified interval, say every month, and spends it gradually at a steady rate. This is illustrated in Fig. 15.4. It is assumed that individual is paid Rs. 12000 salary cheque on the first day of each month. Suppose he gets it cashed (i.e. converted into money) on the very first day and gradually spends it daily throughout the month (Rs. 400 per day) so that at the end of the month he is left with no money.

It can be easily seen that his average money holding in the month will be  $Rs. 12000/2 = Rs. 6000$  (before 15th of a month he will be having more than Rs. 6,000 and after 15th day he will have less than Rs. 6,000). Average holding of money equal to Rs. 6,000 has been shown by the dotted line.

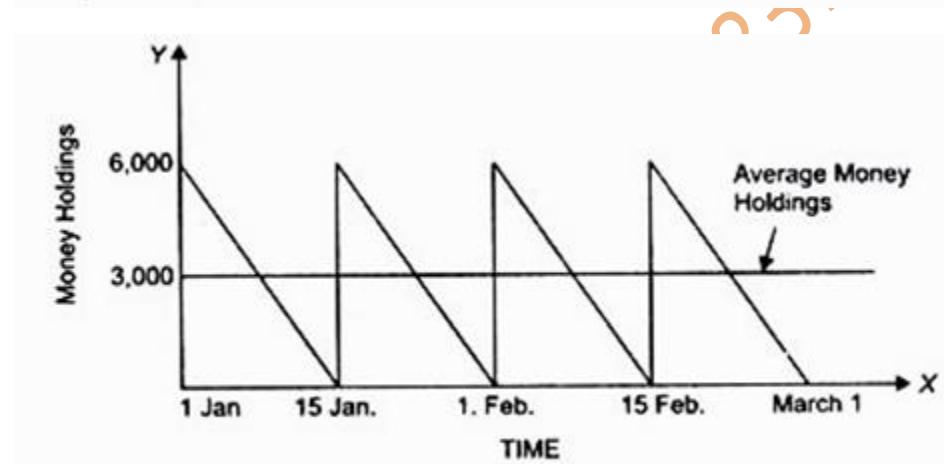
Now, the question arises whether it is the optimal strategy of managing money or what is called optimal cash management. The simple answer is no. This is because the individual is losing interest which he could have earned if he had deposited some funds in interest-bearing saving deposits instead of withdrawing all his salary in cash on the first day. He can manage his money balances so as to earn some interest income as well.

Suppose, instead of withdrawing his entire salary on the first day of a month, he withdraws only half of it (i.e. Rs. 6,000) in cash and deposits the remaining amount of Rs. 6,000 in saving account which gives him interest of 5 per cent, his expenditure per day remaining constant at Rs. 400. This is illustrated in Fig. 15.5.

It will be seen that his money holdings of Rs. 6,000 will be reduced to zero at the end of the 15th day of each month. Now, he can withdraw Rs. 6,000 on the morning of 16th of each month and then spends it gradually, at a steady rate of 400 per day for the next 15 days of a month. This is a better method of managing funds as he will be earning interest on Rs. 6,000 for 15 days in each month. Average money holdings in this money management scheme is  $Rs. 6000/2 = 3000$ .



**Fig. 15.4. Stream of Cash Payments and Transactions Demand for Money.**



**Fig. 15.5. Transactions Demand for Money and Stream of Cash Payments.**

Likewise, the individual may decide to withdraw Rs. 4,000 (i.e., 1/3rd of his salary) on the first day of each month and deposits Rs. 8,000 in the saving deposits. His Rs. 4,000 will be reduced to zero, as he spends his money on transactions (that is, buying of goods and services), at the end of the 10th day and on the morning of 11th of each month he again withdraws Rs. 4,000 to spend on goods and services till the end of the 20th day and on 21st day of the month he again withdraws Rs. 4,000 to spend steadily till the end of the month.

In this scheme on an average he will be holding  $Rs. 4000/2 = 2000$  and will be investing remaining funds in saving deposits and earn interest on them. Thus, in this scheme he will be earning more interest income.

Now, which scheme will he decide to adopt? It may be noted that investing in saving deposits and then withdrawing cash from it to meet the transactions demand involves cost also. Cost on brokerage fee is incurred when one invests in interest-bearing bonds and sells them.

Even in case of saving deposits, the asset which we are taking for illustration, one has to spend on transportation costs for making extra trips to the bank for withdrawing money from the Savings Account. Besides, one has to spend time in the waiting line in the bank to withdraw cash each time from the saving deposits.

Thus, the greater the number of times an individual makes trips to the bank for withdrawing money, the greater the broker's fee he will incur. If he withdraws more cash, he will be avoiding some costs on account of brokerage fee. Thus, individual faces a trade-off problem; the greater the amount of pay cheque he withdraws in cash, less the cost on account of broker's fee but the greater the opportunity cost of forgoing interest income.

The problem is therefore to determine an optimum amount of money to hold. Baumol has shown that optimal amount of money holding is determined by minimizing the cost of interest income forgone and broker's fee. Let us elaborate it further.

Let the size of the pay cheque (i.e. salary) be denoted by  $Y$ , the average amount of the cash he withdraws each time the individual goes to the bank by  $C$ , the number of times he goes to the bank to withdraw cash by  $T$ , broker's fee which he has to bear each time he makes a trip to the bank by  $b$ . In the first scheme of money management when he gets his whole pay-cheque cashed on the first day of every month he incurs broker's fee only once since he makes only a single trip to the bank. Thus

**$T$  in our first case is equal to one**  $T = \frac{Y}{C} = \frac{12000}{12000} = 1$  because in this case  $C = Y$ . In the second

case  $T = \frac{12000}{6000} = 2$  and in the third case  $T = \frac{12000}{4000} = 3$ .

**Interest income lost by holding money is the average amount of money holding multiplied by the interest rate. As seen above, average money held is one half of cash withdrawn each time (i.e.,  $\frac{C}{2}$ ).**

Thus, interest income lost in the first case is  $\frac{rC}{2} = \frac{5}{100} \times \frac{1200}{2} = ₹ 300$ , in the second case interest

lost =  $r \cdot \frac{C}{2} = \frac{5}{100} \times \frac{6000}{2} = 150$  and in the third case it is  $\frac{5}{100} \times \frac{4000}{2} = 100$ .

Thus the total cost incurred on broker's fee and interest income forgone is given by

$$\text{Total Cost} = bT + \frac{rC}{2}$$

where  $b$  stands for broker's fee.

$$\text{As seen above} \quad T = \frac{Y}{C}$$

$$\text{Therefore,} \quad \text{Total Cost} = \frac{Y}{C}b + \frac{rC}{2}$$

Baumol has shown that average amount of cash withdrawal which minimises cost is given by

$$C = \sqrt{\frac{2bY}{r}}$$

This means that average amount of cash withdrawal which minimizes cost is the square root of the two times broker's fee multiplied by the size of individual's income ( $Y$ ) and divided by the interest rate. This is generally referred to as Square Root Rule. For this rule, it follows that a higher broker's fee will raise the money holdings as it will discourage the individuals to make more trips to the bank.

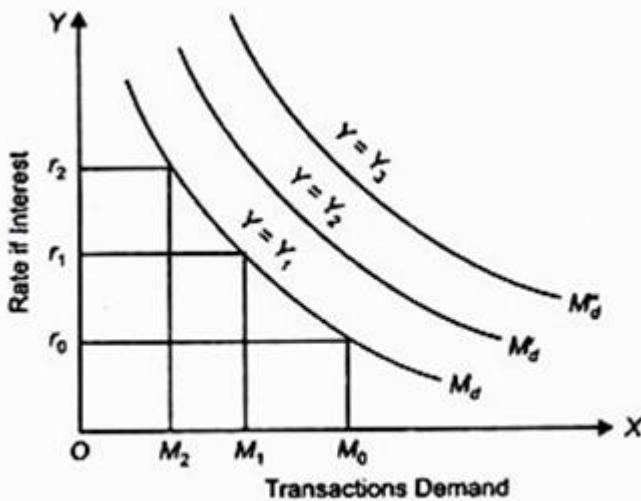
On the other hand, a higher interest rate will induce them to reduce their money holdings for transaction purposes as they will be induced to keep more funds in saving deposits to earn higher interest income. That is, at a higher rate of interest transactions demand for money holdings will decline.

Keynes thought that transactions demand for money was independent of rate of interest. According to him, transactions demand for money depends on the level of income. However, Baumol and Tobin have shown that transactions demand for money is sensitive to rate of interest. Interest represents the opportunity cost of holding money instead of bonds, saving and fixed deposits.

The higher the rate of interest, the greater the opportunity cost of holding money (i.e. the greater the interest income forgone for holding money for transactions). Therefore, at a higher rate of interest people will try to economise the use of money and will demand less money for transactions.

At a lower interest rate on bonds, saving and fixed deposits, the opportunity cost of holding money will be less which will prompt people to hold more money for transactions. Therefore, according to Baumol and Tobin, transactions demand curve for money slopes downward as shown in Fig. 15.6. At higher interest rates, bonds, savings and fixed deposits are more attractive relative to money holding for transactions. Therefore, at higher interest rates people tend to hold less money for transaction purposes.

On the other hand, when the rates of interest are low, opportunity cost of holding money will be less and, as a consequence, people will hold more money for transactions. Therefore, the curve of transactions demand for



**Fig. 15.6. Transactions Demand for Money :  
Baumol-Tobin Approach.**

money slopes downward.

It will be observed from the square root rule given above that transactions demand for money varies directly with the income ( $Y$ ) of the individuals. Therefore, the higher the level of income, the greater the transactions demand for money at a given rate of interest. In Fig. 15.6. the three transactions demand curves for money  $M_d$ ,  $M_d'$  and  $M_d''$ , for three different income levels,  $Y_1$ ,  $Y_2$ ,  $Y_3$  are shown.

It will be known from the square root rule that optimum money holding for transactions will increase less than proportionately to the increase in income. Thus, transactions demand for money, according to Baumol and Tobin, is function of both rate of interest and the level of income.

$$M_{td} = f(r, y)$$

where  $M_{td}$  stands for transactions demand for money,  $r$  for rate of interest and  $Y$  for the level of income.

#### Theory 5# Friedman's Theory of Demand for Money:

A noted monetarist economist Friedman put forward demand for money function which plays an important role in his restatement of the quantity theory of money and prices. Friedman believes that money demand function is most important stable function of macroeconomics.

He treats money as one type of asset in which wealth holders can keep a part of their wealth. Business firms view money as a capital good or a factor of production which they combine with the services of other productive assets or labour to produce goods and services. Thus, according to Friedman, individuals hold money for the services it provides to them.

It may be noted that the service rendered by money is that it serves as a general purchasing power so that it can be conveniently used for buying goods and services. His approach to demand for money does not consider any motives for holding money, nor does it distinguish between speculative and transactions

demand for money. Friedman considers the demand for money merely as an application of a general theory of demand for capital assets.

Like other capital assets, money also yields return and provides services. He analyses the various factors that determine the demand for money and from this analysis derives demand for money function. Note that the value of goods and services which money can buy represents the real yield on money.

Obviously, this real yield of money in terms of goods and services which it can purchase will depend on the price level of goods and services. Besides money, bonds are another type of asset in which people can hold their wealth. Bonds are securities which yield a stream of interest income, fixed in nominal terms. Yield on bond is the coupon rate of interest and also anticipated capital gain or loss due to expected changes in the market rate of interest.

Equities or Shares are another form of asset in which wealth can be held. The yield from equity is determined by the dividend rate, expected capital gain or loss and expected changes in the price level. The fourth form in which people can hold their wealth is the stock of producer and durable consumer commodities.

These commodities also yield a stream of income but in kind rather than in money. Thus, the basic yield from commodities is implicit one. However, Friedman also considers an explicit yield from commodities in the form of expected rate of change in their price per unit of time.

Friedman's nominal demand function ( $M_d$ ) for money can be written as:

$$M_d = f(W, h, r_m, r_b, r_e, P, \Delta P/P, U)$$

As demand for real money balances is nominal demand for money divided by the price level, demand for real money balances can be written as:

$$M_d/P = f(W, h, r_m, r_b, r_e, P, \Delta P/P, U)$$

where  $M_d$  stands for nominal demand for money and  $M_d/P$  for demand for real money balances,  $W$  stands for wealth of the individuals,  $h$  for the proportion of human wealth to the total wealth held by the individuals,  $r_m$  for rate of return or interest on money,  $r_b$  for rate of interest on bonds,  $r_e$  for rate of return on equities,  $P$  for the price level,  $\Delta P/P$  for the change in price level (i.e. rate of inflation), and  $U$  for the institutional factors.

### **1. Wealth (W):**

The major factor determining the demand for money is the wealth of the individual ( $W$ ). In wealth Friedman includes not only non-human wealth such as bonds, shares, money which yield various rates of return but also human wealth or human capital. By human wealth Friedman means the value of an individual's present and future earnings. Whereas non-human wealth can be easily converted into money, that is, can be made liquid.

Such substitution of human wealth is not easily possible. Thus human wealth represents illiquid component of wealth and, therefore, the proportion of human wealth to the non-human wealth has been included in the demand for money function as an independent variable.

Individual's demand for money directly depends on his total wealth. Indeed, the total wealth of an individual represents an upper limit of holding money by an individual and is similar to the budget constraint of the consumer in the theory of demand. The greater the wealth of an individual, the more money he will demand for transactions and other purposes.

As a country becomes richer, its demand for money for transaction and other purposes will increase. Since as compared to non-human wealth, human wealth is much less liquid, Friedman has argued that as the proportion of human wealth in the total wealth increases, there will be a greater demand for money to make up for the illiquidity of human wealth.

### **2. Rates of Interest or Return ( $r_m, r_b, r_e$ ):**

Friedman considers three rates of interest, namely,  $r_m$ ,  $r_b$  and  $r_e$  which determine the demand for money.  $r_m$  is the own rate of interest on money. Note that money kept in the form of currency and demand deposits does not earn any interest.

But money held as saving deposits and fixed deposits earns certain rates of interest and it is this rate of interest which is designated by  $r_m$  in the money demand function. Given the other rates of interest or return, the higher the own rate of interest, the greater the demand for money.

In deciding how large a part of his wealth to hold in the form of money the individual will compare the rate of interest on money with rates of interest (or return) on bonds and other assets. The opportunity cost of holding money is the interest or return given up by not holding these other forms of assets.

As rates of return on bond ( $r_b$ ) and equities ( $r_e$ ) rise, the opportunity cost of holding money will increase which will reduce the demand for money holdings. Thus, the demand for money is negatively related to the rate of interest (or return) on bonds, equities and other such non-money assets.

### **3. Price Level (P):**

Price level also determines the demand for money balances. A higher price level means people will require a larger nominal money balance in order to do the same amount of transactions, that is, to purchase the same amount of goods and services.

If income ( $Y$ ) is used as proxy for wealth ( $W$ ) which, as stated above, is the most important determinant of demand for money, then nominal income is given by  $Y \cdot P$  which becomes a crucial determinant of demand for money. Here  $Y$  stands for real income (i. e. in terms of goods and services) and  $P$  for price level.

As the price level goes up, the demand for money will rise and, on the other hand, if price level falls, the demand for money will decline. As a matter of fact, people adjust the nominal money balances ( $M$ ) to achieve their desired level of real money balance ( $M/P$ ).

### **4. The Expected Rate of Inflation ( $\Delta P/P$ ):**

If people expect a higher rate of inflation, they will reduce their demand for money holdings. This is because inflation reduces the value of their money balances in terms of its power to purchase goods and services.

If the rate of inflation exceeds the nominal rate of interest, there will be negative rate of return on money. Therefore, when people expect a higher rate of inflation they will tend to convert their money holdings into goods or other assets which are not affected by inflation.

On the other hand, if people expect a fall in the price level, their demand for money holdings will increase.

### **5. Institutional Factors (U):**

Institutional factors such as mode of wage payments and bill payments also affect the demand for money. Several other factors which influence the overall economic environment affect the demand for money. For example, if recession or war is anticipated, the demand for money balances will increase.

Besides, instability in capital markets, which erodes the confidence of the people in making profits from investment in bonds and equity shares, will also raise the demand for money. Even political instability in the country influences the demand for money. To account for these institutional factors Friedman includes the variable  $U$  in his demand for money function.

### **Simplifying Friedman's Demand for Money Function:**

A major problem faced in using Friedman's demand for money function has been that due to the non-existence of reliable data about the value of wealth ( $W$ ), it is difficult to estimate the demand for money. To overcome this difficulty Friedman suggested that since the present value of wealth or  $W = Y_p/r$  (where  $Y_p$  is the permanent income and  $r$  is the rate of interest on money.), permanent income  $Y_p$  can be used as a proxy variable for wealth.

Incorporating this in Friedman's demand for money function we have:

$$Md = (Y_p, h, r_m, r_b, r_e, P, \Delta P/P, U)$$

If we assume that no price change is anticipated and institutional factors such as  $h$  and  $U$  remain fixed in the short run and also all the three rates of interest return are clubbed into one, Friedman's demand for money function is simplified to

$$Md = f(Y_{pr})$$

### **Supply of Money:**

Money supply means the total amount of money in an economy. The effective money supply consists mostly of currency and demand deposits.

Currency includes all coins and paper money issued by the government and the banks. Bank deposits (payable on demand) are regarded part of money supply and they constitute about 75 to 80 per cent of the total money supply in the US. Some economists also include near money, or such liquid assets as savings, deposits and government bills in the money supply. The total supply of money is determined by banks, the Federal Reserve, businessmen, the government and consumers.

For theoretical purposes money is defined as any asset which performs the functions of money—but in actual practice, there are many financial assets which perform these functions to a greater or lesser degree and this makes it difficult to measure empirically the magnitude of money. It should be noted that 'money supply' which refers to the total stock of domestic means of payment owned by the 'public' in a country, we consider the stock of money in spendable form only to be the main source of money supply.

In other words, the cash balances held by the central and state governments with the Central Bank and in treasuries are generally excluded on the ground that they arise out of the non-commercial, particularly administrative operations of the government. Thus, the 'quantity of money' means the 'total amount of money in circulation' in existence at a time.

Money is something which is measurable. Supply of money refers to its stock at any point of time, it is because money is a stock variable as against a flow variable (real income). It is the change in the stock of money during a period (say a year), which is a flow. The stock of money always refers to the stock of money held by the public. Throughout history the question of not only what constitutes money but where it comes from has been both important and controversial.

In contrast to income, which is measured over time; the money is a stock, not a flow. Since money is a stock, it means that the amount of money in existence at any point of time must be held by some entity in the economy. Economists make a distinction between amount of money in existence at any point of time and the amount that people and institutions may want to hold for various reasons. When the amount of money actually being held coincides with the amount of money individuals, business houses and governments actually want to hold; a condition of monetary equilibrium exists.

A distinction must be made between the current deposits or current accounts of banks which have the status of money and deposit accounts (fixed or savings deposits) which do not have the status of money and are at best regarded quasi-money or near money. The reason being that time deposits of commercial banks can be drawn only at the end of a fixed period or earlier by paying a penalty or by obtaining prior permission. These are no doubt a store of value but are not the means of payment but only equivalent to means of payment.

These are no doubt liquid assets but they are not so liquid enough as to rank as money. What distinguishes these deposits is the fact that they earn an interest income and can be converted as means of payment only after some delay and not at once. As such, these time and saving deposits are excluded from the pool of the money supply.

However, alternative definitions of money have been adopted by many writers. Notably, the Chicago School led by Milton Friedman opts to include all bank deposits, time and demand, in money supply. In fact, Schwartz and Friedman are willing to consider as money all marketable government securities which are supported at par. By the same logic, there is no reason why the liabilities of saving institutions should not also be included in money.

The debatable question is whether the measure of money should be extended to include other deposits liabilities of the commercial banks, e.g., time deposits in USA and deposit accounts in the UK. Some investigators go further and include the liabilities of some other deposit taking institutions, such as savings and loan associations in the USA and saving banks in Britain, on the grounds that their fixed monetary value—and usually the ease of encashment—makes them good substitutes for interest bearing bank deposits.

It has, therefore, to be observed that various measures of money supply keep on changing from country to country and from time to time within the country. As such, the measurement of money supply becomes an empirical matter. Up to 1968, the RBI published a single measure of money supply (called M and later on M1) defined as currency and demand deposits (dd), held by the public. It was called the narrow measure of money supply. After 1968 the RBI started publishing a 'broader' measure of money supply called aggregate monetary resources (AMR) defined as M or M1 plus the net time deposits of banks held by the public (M3).

**However, since 1977 RBI is publishing data on four alternative measures of money supply denoted by M1, M2, M3 and M4 as follows:**

$$M \text{ or } M1 = c + dd + od$$

$$M2 = M1 + \text{Savings deposits with post office saving banks}$$

$$(AMR) M3 = M1 + \text{net time deposits of banks}$$

$$M4 = M3 + \text{total deposits with post office saving banks.}$$

where c stands for currency held by public; dd, net demand deposits of banks; od implies other deposits of the RBI. Currency includes paper currency and coins, that is notes issued by the RBI and one rupee and other small coins issued by the Government of India.

Net demand deposits include deposits held by public and not inter-bank deposits—deposits held by one bank for another. These are not held by public hence excluded. Other deposits (od) of the RBI are its deposits other than those held by the government (Central and State Governments), banks, and a few others. These other deposits constitute very small proportion (less than one per cent) of the total money supply, hence could be ignored.

Each definition of money supply from M1 to M4 has its adherents; but by and large most economists prefer the most common sense and most acceptable definition of money or money supply, that is, M1—because it includes everything that is generally acceptable as a means of payment but no more. Once you go beyond currency and demand deposits, it is hard to find a logical place to stop, since many things (bonds, stocks, debt instruments) contain liquidity in varying degree. It is better, therefore, to stick to M1 definition of money supply including currency plus all demand deposits.

#### **High powered money and measurement of money supply:**

It should be noted that money supply is not always policy determined. In fact, money supply is determined jointly by monetary authority, banks and the public. It is true that the role of monetary authority is predominant in determining the supply of money.

#### **Two types of money must be distinguished:**

- (i) Ordinary money (M) and
- (ii) High powered money (H).

Ordinary money (M) as we have known is currency plus demand deposits:  $M = C + dd$ . On the other hand, high powered money (H) is the money produced by the RBI and the government of India (small coins including one rupee notes) held by the public and banks.

#### **The RBI calls it H 'reserve money'. H is the sum of:**

- (i) Currency held by public (c);

(ii) Cash reserves of the banks (R) ; and

(iii) Other deposits of RBI (od), we can ignore item (iii) from theoretical discussion as it hardly constitutes one per cent of total H. Hence,  $H = C + R$ . Now, if we compare the two equations of two types of money ordinary money ( $M = C + dd$ ) and high powered money ( $H = C + R$ ), we find C is common to both ; the difference between the two M and H is due to dd in M and R in H. This difference is of vital importance. Banks are producers of demand deposits (dd) and these demand deposits are treated as money at par with currency (c).

But to be able to create (or produce) dd; banks have to maintain R, which in turn, is a part of H, produced only by monetary authority and not by banks. We know in a fractional reserve banking system, dd are a certain multiple of R, which are a component of H; it gives H the quality of high powered-ness (high powered money as compared to M)—the power of serving as the base for multiple creation of dd. That is why, H is also called ‘base money’. H thus becomes the single most dominant factor of determining money supply—called H theory of money supply’—also called money-multiplier theory of money supply.

The actual measurement of money in the modern economy has become an extremely complex matter because a fairly large variety of financial assets exist in the economy that serves as money in one way or another. Before the growth of a large variety of ‘near monies’, the circulating media (ordinary money M) could be described adequately by the term ‘deposit money’ or ‘deposits’, since a good part of the ordinary money (M) that actually circulated in the economy consisted of demand deposits in ‘nations’ commercial banks. But it is too restricted now on account of the growth of new varieties of near monies.

Monetary base which is also called central bank money—consists of all reserves of financial institutions on deposit with the central banks and all currency in actual circulation or in the vaults of commercial banks. This central bank or base money which is also called ‘high powered money’ is the primary means through which the central bank can influence the total money supply in the economy.

It is also called high powered because every unit (rupee) of central bank money provides a support base for several units (rupees) of money in actual circle. The monetary base is important because changes in it have the power to produce multiple change circulating money. The size of the monetary base in turn changes or fluctuates with changes in asset and liabilities of the central bank.

Thus, what the central bank has under its control is the size of money base (central bank money)—Whether or not changes in the monetary base actually lead changes in money in circulation depends upon how the public (including banks and other finance institutions) react to such a change. It is for public to decide whether or not to change its holdings currency, deposits and financial assets that serve as money in response to change in monetary base. Hence, the link between monetary base and the total money in circulation is a real one ; though it is not an exact and mechanical one.

**Thus, let it be clear that:**

- (i) The total supply of money or stock is determined by the behaviour of banks in their decision concerning the size of reserve ratio they wish to maintain,
- (ii) By the behaviour of the non-bank public in their decision to divide their money balances between currency and demand deposits at commercial banks; and
- (iii) By monetary authorities in their decision to change the size of the monetary base and the exercise of their legal authority to set the minimum amount of reserves banks must hold.

It is, therefore, clear that interactions among the actions of the public, the banks and the monetary authorities (central banks) determine the money supply. Behaviour of the public depending on currency deposit ratio C/D, that of banks on reserve deposit ratio R/D and that of monetary authorities by the stock of high powered money or the monetary base H. However, keeping in line with the recent developments in monetary theory, it will be fruitful to adopt the narrow concept of money—currency plus demand deposits—based on the means of payment criterion which facilitates the formulations of a theory of asset choices.

Further, it may also be noted what we exclude from the money supply of a country—the monetary gold stock which serves as international money and is not permitted to circulate within the country; as also we must

exclude the currency and demand deposits owned by the treasury, the central bank, and the commercial banks, which are money issuing institutions holding these funds partly as reserves to support publicly owned demand deposits.

These exclusions are in order because their inclusion i.e., of both the cash holdings of money issuers and the monetary super-structure supported by these holdings would involve double counting. Thus, for all practical purposes, the money supply with public consists of currency (notes and coins) and demand deposits with banks.

In the income and employment analysis quite often money supply is taken and as exogenous variable (depending on the administrative action of the central bank). This convenient simplification has been followed in the employment theory from time to time. But in actual practice the empirical studies on money supply data have shown that it is not at all necessary to assume that the money supply is exogenous—that is, unrelated functionally to other variables in the economic system.

The trend in recent analysis (especially after Friedman) is to treat money supply endogenously, as a variable functionally related to other variables in the economic system. A useful approach along those lines has been developed by Ronald Teigen (of University of Michigan). He suggests a money supply function that reflects both—the profit maximising decisions of the commercial banks and the policy actions of the Central Bank.

It is, therefore, clear that changes in H are policy controlled—while changes in M are largely endogenous, that is, are such as depend mainly on the behavioural choices of the public and banks. That is why it is said that monetary authority will do well to consider M as something outside its control and concentrate its efforts to control H in order to control M. Efforts to control M directly except through H route (or base money) are bound to prove self-defeating.

#### **Supply of Money—Its Main Components:**

It is by now clear that the main components of the supply of money are coins (standard money): paper currency and demand deposits or credit money created by commercial banks:

The term 'Monetary Standard' refers to the type of standard money used in a monetary system. As a matter of fact, the monetary system of a country is generally described in terms of its standard money. The monetary standard, therefore, is synonymous with the standard money. (Monetary system consists of its standard money plus all the paper and credit substitutes tied to and convertible into standard money). When the standard monetary unit is gold, a country is said to have a gold standard system; if the standard monetary unit is defined in terms of both gold and silver, the system is one of bimetallism.

If, however, a country's currency is not convertible in either gold or silver, it is said to be an inconvertible paper money standard. Thus, it is customary to describe the monetary system of a country in terms of its standard money which constitutes the chief source of its supply. It may be noted that the adoption of a particular monetary standard in a country at a particular time, depends upon the economic conditions prevailing there. However, monetary standard which, thus, becomes an essential part of the monetary system, has to be such as will facilitate elastic money supply, economic development and promote the welfare of the people.

A suitable monetary system is one which satisfies both domestic requirements and the necessities of international trade. Generally speaking, the monetary system and, therefore, the monetary standards are guided by internal needs of a particular country, though the international aspects of currency management cannot be ignored.

Countries are no more closed economies. A good money supply system is based on good monetary standard; it must be certain inasmuch as its rules should be clear to the public; simple in working and should be able to create confidence in the public mind besides being economical. Moreover, a good monetary standard or money supply system, should ensure automatic working and control over excessive issue of money supply.

Further, it has to be elastic so that currency can expand and contract according to the requirements of the economy and, above all, it should be able to secure stability of prices as well as rates of exchange. It is, however, difficult to find a unique monetary standard or money supply system which entirely satisfies both domestic and international requirements of money supply. It has, therefore, assumed different forms from

time to time. The standard money or a system of money supply, when it consisted of gold coins took the form of either gold coin standard or gold bullion standard or gold exchange standard.

A comparative study of their features is given in the table below:

### **A COMPARATIVE STUDY OF THE FEATURES OF THE THREE VARIANTS OF GOLD STANDARD**

<b>Gold Coin Standard</b>	<b>Gold Bullion Standard</b>	<b>Gold Exchange Standard</b>
(a) Under it gold serves as a medium of exchange and as a measure of value.	(a) Under it gold serves as a measure of value only and does not serve as medium of exchange.	(a) Gold does not serve either as a medium of exchange or as a measure of value but the currency is indirectly linked to gold.
(b) Gold coins actually circulate and there is free coinage of gold.	(b) Gold coins do not circulate. Hence, there is no question of coinage.	(b) Gold coins do not circulate and the problem of coinage, therefore, does not arise.
(c) Paper notes and subsidiary coins are convertible in gold and there are no restrictions on the internal movement of gold including its export and import.	(c) Paper notes are convertible in gold bars at a fixed rate. The gold is not sold below the minimum amount. Gold is actually available for foreign payments, though it can be had for internal use also.	(c) Home currency is convertible into foreign currency at a fixed rate of exchange. Gold is available for foreign payments but actually foreign currency is given which is convertible into gold.
(d) Under it the representative paper money is backed by cent per cent gold reserves.	(d) Paper currency is convertible and is backed by 30% to 40% gold reserves.	(d) Under it the currency is more or less inconvertible as gold is not directly available.
(e) Gold coin standard is said to be automatic and provides for price stability as well as exchange stability. There is minimum interference by the government.	(e) Under it the element of government management increases and the standard is automatic to a limited extent only. Greater attention is given to the stability of exchange rates.	(e) It is dependent upon the government management and though claimed to be automatic is not so actually. In fact, its working is complicated, though it is said to bring exchange stability as under gold coin standard.

Thus, a comparative study of the features of the three variants of the gold standard would convince anyone about the efficacy of the post war gold standard variants (gold-exchange standard and gold-bullion standard) and the system of money supply based on it. Gold-exchange standard is said to have, more or less, the same uses as the gold-coin standard, at the same time economizing the use of gold and freeing the authorities from the botheration of coinage.

This made it possible for the poor countries to reap the benefits of gold-coin standard and was more in accordance with the monetary environment prevailing in the post-World War, though such a system of money supply called for greater monetary management. It is rather difficult for any one variant of the gold standard to claim undisputed supremacy regarding the regulation of money supply and its control. Having dismissed bimetallism as the standard which does not merit serious consideration, gold-coin standard was strongly favoured.

Though a causality of the two World Wars and the Great Depression, it still commands respect and even liking in certain circles, leaving the choice in favour of a particular variant under the circumstances prevailing in a country. However, modern system of money supply is primarily based on managed currency system.

#### **Paper Currency:**

The paper currency also described as the managed currency standard or the fiat standard, refers to a monetary system in which the standard currency of the country in circulation consists mainly of paper money. Paper standard or the fiat standard as distinguished from metallic standards is essentially the by-product of the World War I, for, before that, world currencies consisted mainly of full-bodied coins made of silver or gold or both.

The period following the World War I ushered in an era of inconveritible paper money. The paper standard or the fiat standard or the managed standard is distinct from other monetary standards inasmuch as, under it,

there is no convertibility of the paper currency in any metal. As a result, the volume of paper currency is determined by the considerations of convenience and economic activities rather than by the volume of metal. Moreover, paper currency system is nationalistic as there is no common link between the different currency systems.

**Thus, the important features of paper currency standard are:**

1. Paper money is the standard money and is accepted as unlimited legal tender in the discharge of obligations;
2. Paper money is not convertible into gold or any other metal;
3. The volume of paper currency is controlled by the monetary authority (central bank), which expands or contracts the currency according to the requirements of the economy;
4. Though the standard money is made of paper, there may be in circulation metallic coins also being unlimited legal tender;
5. For purposes of foreign trade the rate of exchange is determined on the basis of parity between the purchasing power of the currencies of the respective countries.

Suppose one dollar in the United States has the same purchasing power as hundred francs in France, then one dollar will be equal to 100 francs. Since the intrinsic value (real value) of paper money is less than its value as money (face value) and further as it is not convertible into some other form of metal money, it is also referred to as fiat money and the standard as fiat standard. Moreover, the quantity of money in circulation is regulated and managed by the appropriate monetary authority in the country with a view to bringing stability in prices and incomes; therefore, it is also called managed currency system.

The backbone of the currency system is the central bank notes and coins because central bank has the monopoly of note issue, though in certain countries the treasury also issues notes or coins along with the central bank. In India, for instance, one rupee notes are issued and managed in circulation by the government of India, Ministry of Finance, and the rest of the notes and coins are issued and managed by the Reserve Bank of India. Supply of paper money in the country is governed by the system laid down for the purpose.

**Broadly speaking, there are three important methods of note issue:**

- (i) The fixed fiduciary system,
- (ii) The proportional reserve system, and
- (iii) Minimum reserve system.

The first one is in vogue in UK and the second one is prevalent in USA and the third one in India at present. In India proportional reserve system also prevailed up to mid-1950s. Then the minimum reserve system replaced it. How much currency of particular denomination will be in circulation and its proportion to the total money supply are governed by the actions of the public.

The treasury, the commercial banks and the central bank are the agencies through which the preference of the public is expressed. According to the Board of Governors of the Federal Reserve System, "Neither the central bank nor the treasury has under ordinary circumstances any direct way of keeping in circulation a larger amount of currency than the public requires or of reducing the amount of currency that the public needs to finance its current operations".

The desire of the public to hold more or less currency or more or less of particular denominations is normally influenced by many factors like the volume of trade, nature of trade—whether wholesale or retail price level, methods of payments, banking habits of public, volume of demand deposits, volume of transactions, distribution of national income, methods of taxation, public loans, deficit financing, etc.

**Demand Deposits:**

In most of the economically advanced countries like UK and USA the bulk of the total supply of money is deposit money which refers to the commercial banks' total demand deposit. As such the course of behaviour of the internal price level is greatly affected by changes in the volume of deposit money or bank credit. These demand deposits of the commercial banks are the outcome of the public deposits with the banks, and bank loans, advances and investments.

The public deposits which are cash deposits are called 'primary deposits' because they are the result of the real savings of the people and deposits which are the result of banks' loans and advances to customers are called 'derivative deposits' and represent the creation of credit by banks. The relative amounts of the two main sources of money supply, viz., the currency and demand deposits, depend upon the degree of monetization of the economy, banking habit, banking development, trade practices, etc. in the economy.

For example, almost 80 per cent of the money supply of the US is made of demand deposits. While in underdeveloped countries like India, the proportion of the currency money to the total money supply with the public is considerably large because a very high percentage of transactions are performed through cash payments rather than credit instruments like cheques, etc.

#### **Changes—Elasticity and Velocity of Money:**

Although these terms are being used interchangeably in monetary economics, yet it would be useful to understand the distinction amongst these terms and to use them as such. Changes imply simple variations in the total quantum of money supply due to the changes in the expenditures of the government exceeding its revenue (through taxes and borrowings)—the supply of money in the economy may increase. This happens because the excess expenditure of the government sector is to be financed either by taking loans from the central bank or by selling government securities to the banking system or by way of printing more money (deficit financing), and this, in turn, changes the supply of money.

Similarly, the private sector (domestic and foreign) also affects the money supply by increasing or decreasing loans and advances from the banking system as also by making purchases and sales of shares and securities from and to the banking sector. These are all instances of a simple and ordinary change or variation in money supply.

The ability of the supply of the circulating media to adjust itself to changes in the volume of trade without affecting the general price level is often termed as 'monetary elasticity'. In other words, 'elasticity of money' to adjust itself in an appropriate manner to implied changes in the needs for money is the ability in order to meet or mitigate the seasonal or cyclical monetary demand. Elastic money supply refers to the situation occurring in a monetary system in which the volume of currency in circulation can be varied to meet different needs.

The degree of monetary elasticity depends on the action and power of the central bank. If the money market is well organized and developed the central bank can perform the function of monetary elasticity with efficiency. Thus, a change in needs necessitates a change or variation in money supply and this, in turn, necessitates elasticity in the supply of money.

So far our analysis remained confined to the total supply of money at a moment of time. We are equally interested in finding out what the supply of money is over a period of time, say a year, and for this we have to bring into the picture what is called the velocity of circulation of money. It is the basic function of money that has to be re-spent.

The average number of times each unit of money changes hands or is spent on goods and services during a given period is called velocity of money. Therefore, the supply of money during a given period is the total amount of money in circulation ( $M$ ) multiplied by the average number of times it changes hands during that period ( $V$ ). In algebraic terms the supply of money during a given period is denoted by  $MV$ . Velocity will depend upon the time involved in receiving and spending the money, methods and habits of payments, trade and business conditions, liquidity preference, etc. A concept closely related to the transactions velocity of money is the income velocity of money, which is the number of times that money moves from one income recipient to another. It can be derived by dividing the total national product by the money supply.

The issue whether there is any ceiling to an increase in the income velocity of money is an unsettled one. Views on this matter differ sharply. The Radcliffe Report does not find "any reason for supposing or any

experience in monetary history indicating, that there is any limit to the velocity of circulation." In sharp contrast to this view, Newlyn contends that, "...a specialised exchange economy necessarily involves the holding of the medium of exchange over time. However, efficient the monetary system, there must, therefore, be some finite limit to the velocity of circulation and the more the rate of interest is prevented from rising by rationing, the lower this limit will be."

Similarly, Ritter has argued that "as interest rates continue to rise, due to continued monetary restraint and persistent demand for funds, idle balances are likely to approach minimum levels. Correspondingly, velocity is likely to encounter an upper limit, a rough and perhaps flexible ceiling, but a ceiling nevertheless." In brief, we can say that given the quantity of money there is likely to be a limit to the rise in money income or, in other words, there is ceiling to the rise in income velocity of money.

#### **Main determinants of the supply of money are (a) monetary base and (b) the money multiplier:**

Main determinants of the supply of money are (a) monetary base and (b) the money multiplier. These two broad determinants of money supply are, in turn, influenced by a number of other factors. Various factors influencing the money supply are discussed below:

##### **1. Monetary Base:**

Magnitude of the monetary base (B) is the significant determinant of the size of money supply. Money supply varies directly in relation to the changes in the monetary base.

Monetary base refers to the supply of funds available for use either as cash or reserves of the central bank. Monetary base changes due to the policy of the government and is also influenced by the value of money.

##### **2. Money Multiplier:**

Money multiplier (m) has positive influence upon the money supply. An increase in the size of m will increase the money supply and vice versa.

##### **3. Reserve Ratio:**

Reserve ratio (r) is also an important determinant of money supply. The smaller cash-reserve ratio enables greater expansion in the credit by the banks and thus increases the money supply and vice versa.

Reserve ratio is often broken down into its two component parts; (a) excess reserve ratio which is the ratio of excess reserves to the total deposits of the bank ( $re = ER/D$ ); (b) required reserve ratio which is the ratio of required reserves to the total deposits of the bank ( $rr = RR/D$ ). Thus  $r = re + rr$ . The rr ratio is legally fixed by the central bank and the re ratio depends on the market rate of interest.

##### **4. Currency Ratio:**

Currency ratio (c) is a behavioural ratio representing the ratio of currency demand to the demand deposits. The effect of the currency ratio on the money multiplier (m) cannot be clearly recognised because enters both as a numerator and a denominator in the money multiplier expression  $(1 + c/r(1 + t) + c)$ . But, as long as the r ratio is less than unity, a rise in the c ratio must reduce the multiplier.

##### **5. Confidence in Bank Money:**

General economic conditions affect the confidence of the public in bank money and, thereby, influence the currency ratio (c) and the reserve ratio (r). During recession, confidence in bank money is low and, as a result, c and r ratios rise. Conversely, during prosperity, c and r ratios tend to be low when confidence in banks is high.

##### **6. Time-Deposit Ratio:**

Time-deposit ratio (t), which represents the ratio of time deposits to the demand deposits is a behavioural parameter having negative effect on the money multiplier (m) and thus on the money supply. A rise in t reduces m and thereby the supply of money decreases.

### **7. Value of Money:**

The value of money ( $1/P$ ) in terms of other goods and services has positive influence on the monetary base (B) and hence on the money stock.

### **8. Real Income:**

Real income (Y) has a positive influence on the money multiplier and hence on the money supply. A rise in real income will tend to increase the money multiplier and thus the money supply and vice versa.

### **9. Interest Rate:**

Interest rate has a positive effect on the money multiplier and hence on the money supply. A rise in the interest rate will reduce the reserve ratio (r), which raises the money multiplier (m) and hence increases the money supply and vice versa.

### **10. Monetary Policy:**

Monetary policy has positive or negative influence on the money multiplier and hence on the money supply, depending upon whether reserve requirements are lowered or raised. If reserve requirements are raised, the value of reserve ratio (r) will rise reducing the money multiplier and thus the money supply and vice versa.

### **11. Seasonal Factors:**

Seasonal factors have negative effect on the money multiplier, and hence on the money stock. During holiday periods, the currency ratio (c) will tend to rise, thus, reducing the money multiplier and, thereby, the money supply.

### **The Phillips Curve**

**Definition:** The inverse relationship between unemployment rate and inflation when graphically charted is called the Phillips curve. William Phillips pioneered the concept first in his paper "The Relation between Unemployment and the Rate of Change of Money Wage Rates in the United Kingdom, 1861-1957," in 1958. This theory is now proven for all major economies of the world.

**Description:** The theory states that the higher the rate of inflation, the lower the unemployment and vice-versa. Thus, high levels of employment can be achieved only at high levels of inflation. The policies to induce growth in an economy, increase in employment and sustained development are heavily dependent on the findings of the Phillips curve.

However, the implications of Phillips curve have been found to be true only in the short term. Phillips curve fails to justify the situations of stagflation, when both inflation and unemployment are alarmingly high.

The Phillips curve given by A.W. Phillips shows that there exist an inverse relationship between the rate of unemployment and the rate of increase in nominal wages.

A lower rate of unemployment is associated with higher wage rate or inflation, and vice versa. In other words, there is a tradeoff between wage inflation and unemployment.

Reason: during boom, demand for labour increases. Due to greater bargaining power of the trade union, wage increases.

Thus, decrease in unemployment leads to increase in the wage (Fig. 13.6). But when wage increases, the firms cost of production increases which leads to increase in price. Therefore it is also called wage inflation, that is, decrease in unemployment leads to wage inflation. (Fig. 13.6)

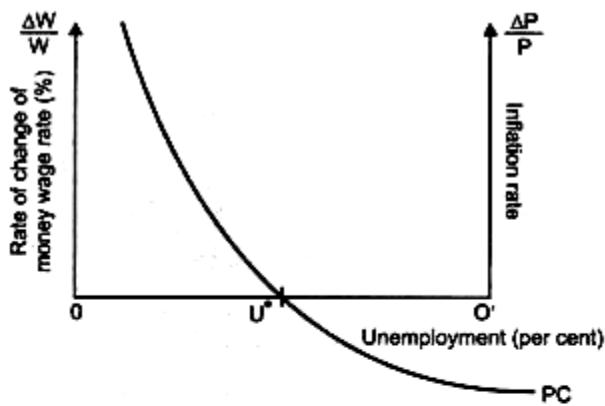


FIG. 13.6

To explain the trade off between growth rate of wages and unemployment:

Let  $W_t \rightarrow$  Wage in the last period

$W_{t+1} \rightarrow$  Wage in this current period

Then growth rate of wage inflation ( $g_w$ ) will be:

$$g_w = \frac{W_{t+1} - W_t}{W_t} \dots (1)$$

### Phillips curve relationship

With  $U^*$  representing NRU, the equation of Phillips curve, can be written as:

$$g_w = -\epsilon(U - U^*) \dots (1a) \quad \epsilon \rightarrow \text{Response of wage change to Unemployment rate}$$

OR  
 $U - U^* \rightarrow$  Unemployment gap  
 $U \rightarrow$  Actual unemployment  
 $U^* \rightarrow$  NRU

$$\text{or } W_{t+1} = W_t [1 - \epsilon(U - U^*)] \dots (2)$$

— (For proof refer to 13.1)

Equation (1a) shows:

if  $U > U^*$  wages are falling because  $g_w$  is negative ( $g_w < 0$ )

$U < U^*$  wages are rising because  $g_w$  is positive ( $g_w > 0$ )

This show that there exists inverse relationship between the rate of unemployment and growth rate of money wages.

The Phillips Curve shows that wages and prices adjust slowly to changes in AD due to imperfections in the labour market.

e.g. Assume: Initially, the economy is in equilibrium with stable prices and unemployment at NRU ( $U^*$ ) (Fig. 13.7)

If Money supply increases by 10%, with price level constant, real money supply ( $M/P$ ) will increase. This will lead to decrease in interest rate and thus increase in AD which in turn will lead to an increase in both wages and prices by 10% so that the economy reaches back to the full employment equilibrium level ( $U^*$ ) i.e. at NRU.

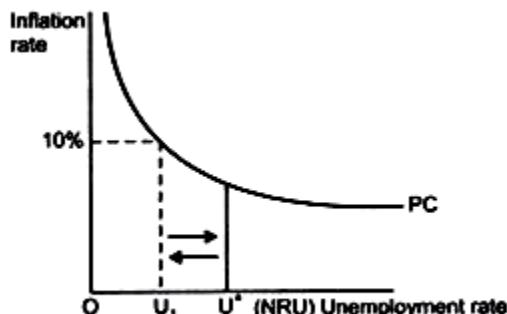


FIG. 13.7

Thus, Phillips curve shows that when wage increases by 10%, unemployment rate will fall from  $U^*$  to  $U_1$ . This will cause the wage rate to increase, but when wage increases, prices will also increase and eventually the economy will return back to the full-employment level of output and unemployment.

Rewriting equation 1 which shows Relation between wage inflation to unemployment

$$W_{t+1} = w_t [1 - \epsilon(U - U^*)] \dots (2)$$

Equation shows that wages will increase only if  $U < U^*$

Since Phillips curve shows a trade off between inflation and unemployment rate, any attempt to solve the problem of inflation will lead to an increase in the unemployment. Similarly, any attempt to decrease unemployment will aggravate inflation. Thus, the negative sloped Phillips Curve suggested that the policy makers in the short run could choose different combinations of unemployment and inflation rates.

In the long run, however, permanent unemployment – inflation trade off is not possible because in the long run Phillips curve is vertical. Since in the short run AS curve (Phillips Curve) is quite flat, therefore, a trade off between unemployment and inflation rate is possible. It offers the policy makers to chose a combination of appropriate rate of unemployment and inflation.

#### I. Wage – Unemployment Relationship:

(Relationship between  $gw$  and the level of employment)

Why are wages sticky? Or Why nominal wages adjust slowly to changes in demand?

According to the Neo-Classical theory of supply, wages respond and adjust quickly to ensure that output is always at full-employment level. This is because wages and prices are completely flexible. Therefore, the economy will always produce full employment output but the Phillips curve suggests that wages adjust slowly in response to changes in unemployment to ensure that output is at full employment level.

#### Reason:

The wages are sticky and therefore they move slowly over the time. They are not fully and immediately flexible, to ensure full employment at every point in time. To understand wage stickiness, the Phillips curve relationship is translated into a relationship between the rate of change of wages ( $gw$ ) and the level of employment.

Let  $N^*$  → full employment level  
 $N$  → Actual employment level

Unemployment rate ( $u$ ) is that fraction of full-employment labour force,  $N^*$ , which is not employed.

$$u - u^* = \frac{N^* - N}{N^*} \dots(ii) \quad \text{where } u - u^* \Rightarrow \text{Unemployment rate}$$

$$g_w = \frac{W_{t+1} - W_t}{W_t} \dots \text{from (i)}$$

with  $u^*$  representing NRU, the Phillips curve can be written as:

$$g_w = -\epsilon (U - U^*) \dots(ia) \quad \epsilon \rightarrow \text{Responsiveness of wages to unemployment}$$

Putting value of (ii) in (ia).

$$\Rightarrow g_w = -\epsilon \left( \frac{N^* - N}{N^*} \right) \dots(iii)$$

Putting the value of  $g_w$  we get:

$$W_{t+1} = W_t \left[ 1 + \epsilon \left( \frac{N^* - N}{N^*} \right) \right]^t \quad \text{Wage employment relation} \dots(iv)$$

Equation (iv) shows the relationship between wage and employment, WN

**Proof:**

$$1. \quad g_w = \frac{W_{t+1} - W_t}{W_t} \dots(i) \quad g_w \text{ in terms of wages}$$

$$g_w = -\epsilon (U - U^*) \dots(ia) \quad g_w \text{ in terms of unemployment}$$

$$\therefore u - u^* = \frac{N^* - N}{N^*} \dots(ii)$$

∴ Equation (ia) can be written as:

$$g_w = -\epsilon \left( \frac{N^* - N}{N^*} \right) \dots(iii)$$

$$\because (i) = (iii)$$

$$\therefore \frac{W_{t+1} - W_t}{W_t} = -\epsilon \left( \frac{N^* - N}{N^*} \right)$$

$$\text{or} \quad W_{t+1} - W_t = W_t \left[ -\epsilon \left( \frac{N^* - N}{N^*} \right) \right]$$

$$\text{or} \quad W_{t+1} = W_t + W_t \left[ -\epsilon \left( \frac{N^* - N}{N^*} \right) \right]$$

$$\text{or} \quad W_{t+1} = W_t \left[ 1 - \epsilon \left( \frac{N^* - N}{N^*} \right) \right]$$

$$\text{or} \quad W_{t+1} = W_t \left[ 1 + \epsilon \left( \frac{N^* - N}{N^*} \right) \right]$$

### Wage employment relation shows that:

Wages in this period = wages in the last period but with adjustment in the level of employment.



FIG. 13.8: WAGE EMPLOYMENT RELATION

There exists positive relationship between wages and employment because according to Phillips curve any attempt to decrease unemployment will lead to increase in wages. Decrease in unemployment means increase in employment. Therefore, when employment increases wages increase. Thus, the positively sloped WN curve shows that the wage rate paid by firms is higher when more hours are worked.

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**Figure (13.8) shows that:**

(i) Initially the economy is at full employment level

$$N = N^* \text{ (at point } e_0\text{)} \quad N^* \rightarrow \text{full employment level}$$

$g_w \rightarrow$  Unemployment rate or wage inflation

when employment is at Neo-classical equilibrium level  $N^*$

Wages in next period ( $W_{t+1}$ ) = wages in this period ( $W_t$ )

$$\therefore g_w = 0$$

(ii) If employment level increases from  $N^*$  to  $N_1$  there will be no shift in WN curve.

(ii) However  $N_1 > N^*$  at point  $e_1$

As Employment ( $N_1$ ) is above full employment ( $N^*$ ), that is over employment. Money wage will increase from  $W_t$  to  $W_{t+1}$ , and the economy moves from point  $e_0$  to  $C$  along the same WN curve.

$$\therefore W_{t+1} > W_t$$

$\therefore$  WN curve shifts upwards in the next period to  $WN'$ .

**Reason:** Any change in aggregate demand will affect the unemployment rate in the current period and will affect the wages in the subsequent period.

(iii) Similarly if  $N < N^*$  (at point  $e_2$ )

Employment is  $N_2$  which is below full employment level, that is, there is under employment in this period

$$W_{t+1} < W_t$$

WN curve shifts downwards in the next period to  $WN''$

Joint points A,  $e_0$ , and  $C$ , we get the wage employment line which is positively sloped. However, the extent to which wage responds to employment depends on  $g_w$  (response of money wage growth to change in unemployment).

If  $\epsilon$  is large — Unemployment has large affects on wage and WN line is steep.

### Conclusion:

The Phillips curve, therefore, also implies that WN relationship shifts over the time if actual employment differs from full employment level. The changes in AD which alter the rate of unemployment in this period will affect wages in subsequent periods. The adjustment to changes in employment is dynamic, i.e., it takes place over the time.

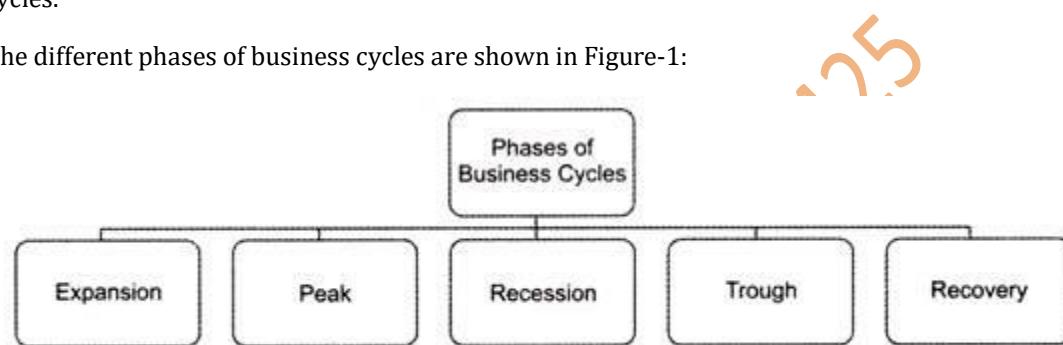
### BUSINESS CYCLE:

Business cycles are characterized by boom in one period and collapse in the subsequent period in the economic activities of a country.

These fluctuations in the economic activities are termed as phases of business cycles.

The fluctuations are compared with ebb and flow. The upward and downward fluctuations in the cumulative economic magnitudes of a country show variations in different economic activities in terms of production, investment, employment, credits, prices, and wages. Such changes represent different phases of business cycles.

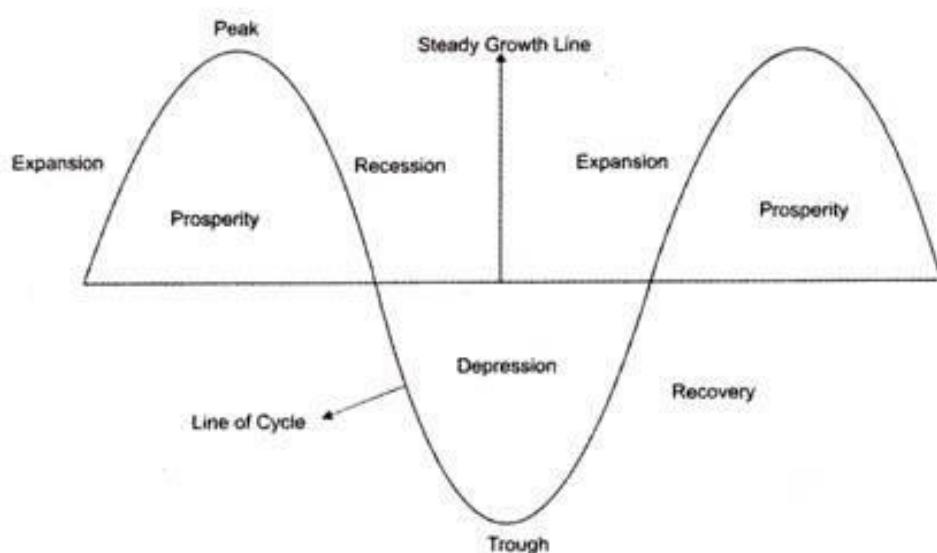
The different phases of business cycles are shown in Figure-1:



**Figure-1: Different Phases of a Business Cycle**

There are basically two important phases in a business cycle that are prosperity and depression. The other phases that are expansion, peak, trough and recovery are intermediary phases.

Figure-2 shows the graphical representation of different phases of a business cycle:



**Figure-2: Representation of Phases of a Business Cycle**

As shown in Figure-2, the steady growth line represents the growth of economy when there are no business cycles. On the other hand, the line of cycle shows the business cycles that move up and down the steady growth line. The different phases of a business cycle (as shown in Figure-2) are explained below.

#### **1. Expansion:**

The line of cycle that moves above the steady growth line represents the expansion phase of a business cycle. In the expansion phase, there is an increase in various economic factors, such as production, employment, output, wages, profits, demand and supply of products, and sales.

In addition, in the expansion phase, the prices of factor of production and output increases simultaneously. In this phase, debtors are generally in good financial condition to repay their debts; therefore, creditors lend money at higher interest rates. This leads to an increase in the flow of money.

In expansion phase, due to increase in investment opportunities, idle funds of organizations or individuals are utilized for various investment purposes. Therefore, in such a case, the cash inflow and outflow of businesses are equal. This expansion continues till the economic conditions are favorable.

#### **2. Peak:**

The growth in the expansion phase eventually slows down and reaches to its peak. This phase is known as peak phase. In other words, peak phase refers to the phase in which the increase in growth rate of business cycle achieves its maximum limit. In peak phase, the economic factors, such as production, profit, sales, and employment, are higher, but do not increase further. In peak phase, there is a gradual decrease in the demand of various products due to increase in the prices of input.

The increase in the prices of input leads to an increase in the prices of final products, while the income of individuals remains constant. This also leads consumers to restructure their monthly budget. As a result, the demand for products, such as jewellery, homes, automobiles, refrigerators and other durables, starts falling.

#### **3. Recession:**

As discussed earlier, in peak phase, there is a gradual decrease in the demand of various products due to increase in the prices of input. When the decline in the demand of products becomes rapid and steady, the recession phase takes place.

In recession phase, all the economic factors, such as production, prices, saving and investment, starts decreasing. Generally, producers are unaware of decrease in the demand of products and they continue to produce goods and services. In such a case, the supply of products exceeds the demand.

Over the time, producers realize the surplus of supply when the cost of manufacturing of a product is more than profit generated. This condition firstly experienced by few industries and slowly spread to all industries.

This situation is firstly considered as a small fluctuation in the market, but as the problem exists for a longer duration, producers start noticing it. Consequently, producers avoid any type of further investment in factor of production, such as labor, machinery, and furniture. This leads to the reduction in the prices of factor, which results in the decline of demand of inputs as well as output.

#### **4. Trough:**

During the trough phase, the economic activities of a country decline below the normal level. In this phase, the growth rate of an economy becomes negative. In addition, in trough phase, there is a rapid decline in national income and expenditure.

In this phase, it becomes difficult for debtors to pay off their debts. As a result, the rate of interest decreases; therefore, banks do not prefer to lend money. Consequently, banks face the situation of increase in their cash balances.

Apart from this, the level of economic output of a country becomes low and unemployment becomes high. In addition, in trough phase, investors do not invest in stock markets. In trough phase, many weak organizations leave industries or rather dissolve. At this point, an economy reaches to the lowest level of shrinking.

### 5. Recovery:

As discussed above, in trough phase, an economy reaches to the lowest level of shrinking. This lowest level is the limit to which an economy shrinks. Once the economy touches the lowest level, it happens to be the end of negativism and beginning of positivism.

This leads to reversal of the process of business cycle. As a result, individuals and organizations start developing a positive attitude toward the various economic factors, such as investment, employment, and production. This process of reversal starts from the labor market.

Consequently, organizations discontinue laying off individuals and start hiring but in limited number. At this stage, wages provided by organizations to individuals is less as compared to their skills and abilities. This marks the beginning of the recovery phase.

In recovery phase, consumers increase their rate of consumption, as they assume that there would be no further reduction in the prices of products. As a result, the demand for consumer products increases.

In addition in recovery phase, bankers start utilizing their accumulated cash balances by declining the lending rate and increasing investment in various securities and bonds. Similarly, adopting a positive approach other private investors also start investing in the stock market. As a result, security prices increase and rate of interest decreases.

Price mechanism plays a very important role in the recovery phase of economy. As discussed earlier, during recession the rate at which the price of factor of production falls is greater than the rate of reduction in the prices of final products.

Therefore producers are always able to earn a certain amount of profit, which increases at trough stage. The increase in profit also continues in the recovery phase. Apart from this, in recovery phase, some of the depreciated capital goods are replaced by producers and some are maintained by them. As a result, investment and employment by organizations increases. As this process gains momentum an economy again enters into the phase of expansion. Thus, a business cycle gets completed.

### Samuelson's Model of Business Cycles: Interaction between Multiplier and Accelerator

Keynes made an important contribution to the understanding of the cyclical fluctuations by pointing out that it is the ups and downs in investment demand, depending as it is on the profit expectations of the entrepreneurs, that causes changes in aggregate demand which affect the levels of income, output and employment.

Further, by putting forward the theory of multiplier, Keynes has shown how the effect of increase and decrease in investment on output and employment get magnified when multiplier is working during either the upswing or downswing of a business cycle.

However, Keynes did not explain the cyclical and cumulative nature of the fluctuations in economic activity. This is because Keynes did not give any importance to the accelerator in his explanation of business cycles. Samuelson in his seminal paper convincingly showed that it is the interaction between the multiplier and accelerator that gives rise to cyclical fluctuations in economic activity.

The multiplier alone cannot adequately explain the cyclical and cumulative nature of the economic fluctuations. An autonomous increase in the level of investment raises income by a magnified amount depending upon the value of the multiplier.

This increase in income further induces the increases in investment through the acceleration effect. The increase in income brings about increase in aggregate demand for goods and services. To produce more goods we require more capital goods for which extra investment is undertaken.

Thus the relationship between investment and income is one of mutual interaction; investment affects income which in turn affects investment demand and in this process income and employment fluctuate in a cyclical manner.

We have shown below in Fig. 27.4 how income and output will increase by even larger amount when accelerator is combined with the Keynesian multiplier,

Where  $\Delta I_a$  = Increase in Autonomous Investment

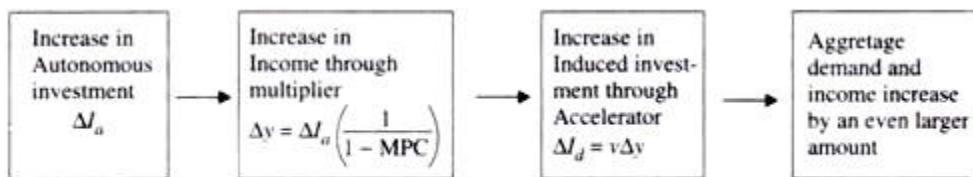


Fig. 27.4. Combining Accelerator with Keynesian Multiplier

$\Delta Y$  = Increase in Income.

$1 / (1 - MPC)$  = Size of Multiplier where MPC = Marginal Propensity to Consume.

$\Delta I_d$  = Increase in Induced Investment

$v$  = Size of accelerator.

Fluctuations in investment are the main cause of instability in a free private-enterprise economy. This instability further increases due to the interaction of the multiplier and accelerator. The changes in any component of aggregate demand produce a multiplier effect whose magnitude depends upon the marginal propensity to consume.

When consumption, income and output increase under the influence of multiplier effect, they induce further changes in investment and the extent of this induced investment in capital goods industries depends on the capital-output ratio, that is, the interaction between the multiplier and accelerator without any external shocks can give rise to the business cycles whose pattern differs depending upon the magnitudes of the marginal propensity to consume and capital-output ratio.

The model of interaction between multiplier and accelerator can be mathematically represented as under:

$$Y_t = C_t + I_t \dots (i)$$

$$C_t = C_a + c(Y_{t-1}) \dots (ii)$$

$$I_t = I_a + v(Y_t - Y_{t-1}) \dots (iii)$$

Where  $Y_t$   $C_t$   $I_t$  stand for income, consumption and investment respectively for a period  $t$ ,  $C_a$  stands for autonomous consumption,  $I_a$  for autonomous investment,  $c$  for marginal propensity to consume and  $v$  for the capital-output ratio or accelerator.

From the above equations it is evident that consumption in a period  $t$  is a function of income of the previous period  $Y_{t-1}$ . That is, one period lag has been assumed for income to determine the consumption of a period. As regards induced investment in period  $t$ , it is taken to be the function of the change in income in the previous period.

This means that there is two periods gap for changes in income to determine induced investment. In the equation (iii) above, induced investment equals  $v(Y_{t-1} - Y_{t-2})$  or  $v(\Delta Y_{t-1})$ . Substituting equations (ii) and (iii) in equation (i) we have the following income equation which states how changes in income are dependent on the values of marginal propensity to consume ( $c$ ) and capital-output ratio  $v$  (i.e., accelerator).

$$Y_t = C_a + c(Y_{t-1}) + I_a + v(Y_{t-1} - Y_{t-2}) \dots (iv)$$

In static equilibrium, the level of income determined will be:

$$Y = C_a + cY + I$$

This is due to the fact that in static equilibrium, given the data of the determining factors-, the equilibrium level of income remains unchanged, that is, in this case,  $Y_t = Y_{t-1} = Y_{t-2} = \dots = Y_{t-n}$  so that period lags have no influence at all and accelerator is reduced to zero.

Thus, in a dynamic state when autonomous investment changes, the equation (iv) describes the path which a disequilibrium system follows to reach either a final equilibrium state or moves away from it. But whether the economy moves towards a new equilibrium or deviates away from it depends on the values of marginal propensity to consume ( $c$ ) and capital-output ratio  $v$  (i.e., accelerator).

By taking different combinations of the values of marginal propensity to consume ( $c$ ) and capital-output ratio ( $v$ ), Samuelson has described different paths which the economy will follow. The various combinations of the values of marginal propensity to consume and capital-output ratio (which respectively determine the magnitudes of multiplier and accelerator) are shown in Fig. 27.5.

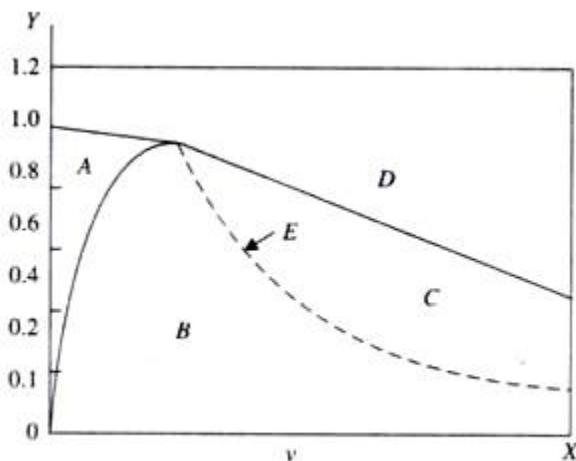


Fig. 27.5. Combinations of  $c$  &  $v$

The four paths or patterns of movements which the economic activity (as measured by gross national product or income) can have depending upon various combinations of the values of marginal propensity to consume ( $c$ ) and capital-output ratio ( $v$ ) are depicted in Fig. 27.6.

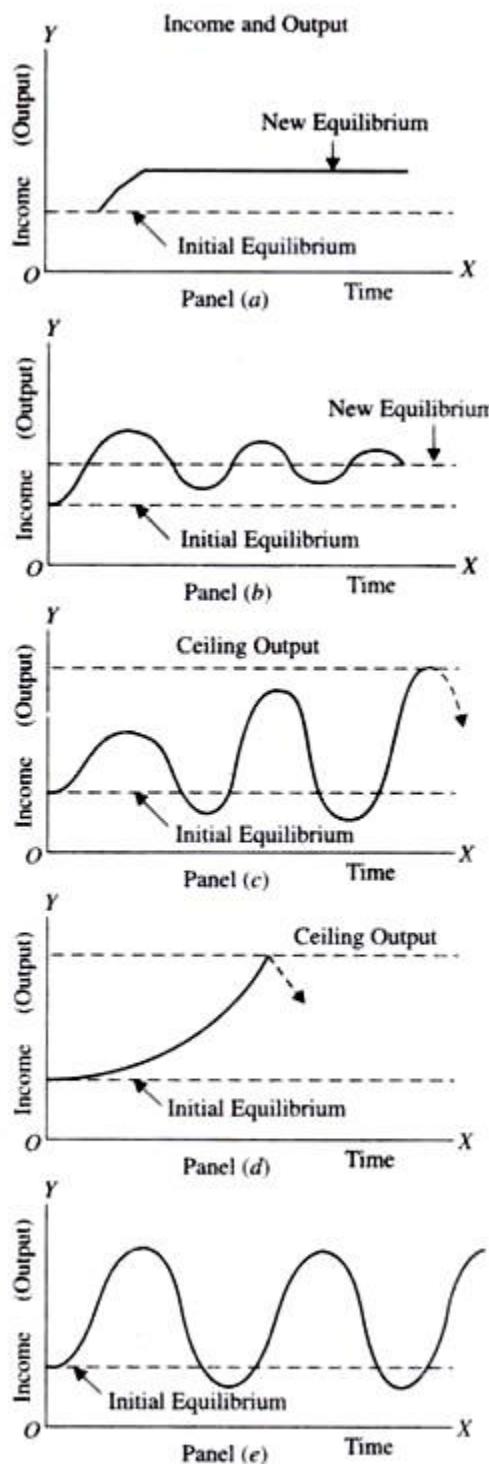


Fig. 27.6. Interaction between Multiplier and Accelerator: Different Patterns of Income (output) movements for various values of  $c$  and  $v$

When the combinations of the value of marginal propensity to consume ( $c$ ) and capital-output ratio ( $v$ ) lie within the region marked A, with a change in autonomous investment, the gross national product or income moves upward or downward at a decreasing rate and finally reaches a new equilibrium as is shown in panel a) of Fig. 27.6.

If the values of  $c$  and  $v$  are such that they lie within the region B, the change in autonomous investment or autonomous consumption will generate fluctuations in income which follow the pattern of a series of

damped cycles whose amplitudes go on declining until the cycles disappear as is shown in panel (b) of Fig. 27.6.

The region C in Fig. 27.6 represents the combinations of  $c$  and  $v$  which are relatively high as compared to the region B and determine such values of multiplier and accelerator that bring about explosive cycles, that is, the fluctuations of income with successively greater and greater amplitude.

The situation is depicted in panel (c) of Fig. 27.6 which shows that the system tends to explode and diverges greatly from the equilibrium level. The region D provides the combinations of  $c$  and  $v$  which cause income to move upward or downward at an increasing rate which has some-how to be restrained if the cyclical movements are to occur.

This is depicted in panel (d) of Fig. 27.6. Like the values of multiplier and accelerator of region C, their values in region D cause the system to explode and diverge from the equilibrium state by an increasing amount.

In a special case when values of  $C$  and  $V$  (and therefore the magnitudes of multiplier and accelerator) lie in region E, they produce fluctuations in income of constant amplitude as is shown in panel (e) of Fig. 27.6.

It follows from above that region A and B are alike, they after a disturbance caused by a change in autonomous investment or consumption finally bring about stable equilibrium in the system. On the other hand, the values of  $c$  and  $v$  and therefore the magnitudes of multiplier and accelerator of region C and D resemble each other but are such that they cause great instability in the system as both of these values cause successively greater divergence from the equilibrium level and the system tends to explode. The case of region E lies in between the two as the combinations of values of  $c$  and  $v$  in it are such that cause cyclical movements of income which neither move toward nor away from the equilibrium.

It is worth noting that all the above five cases do not give rise to cyclical fluctuations or business cycles. It is only combinations of  $c$  and  $v$  lying in regions B, C and E that produce business cycles. The values of accelerator and multiplier in the region A are such that with a disturbance caused by a change in autonomous investment or autonomous consumption, the economic activity (as measured by the level of income or Gross National Product) moves smoothly from an initial equilibrium to a new equilibrium with no cyclical fluctuations or oscillations.

On the other hand, the values of  $c$  and  $v$  (and therefore of multiplier and accelerator) of the region B produce cyclical fluctuations which are of the type of damped oscillations that tend to disappear over time, that is, the amplitude of the cycles shrinks to zero over a period of time. However, this contradicts the historical experience which reveals that there is no tendency for the cyclical movements to disappear or die out over time.

However, it is worth noting that the case B explains the impact of a single disturbance on income and employment. For example, the effect of a onetime increase in autonomous investment goes on diminishing over time if no other disturbance takes place.

However, in reality, further disturbances such as technological advances, innovations, natural disasters and man-made disasters such as security scam in India in 1991-92 do take place quite frequently and at random intervals and in a way they provide shocks to the system.

Thus, the values of  $c$  and  $v$  of region B can generate cyclical fluctuations over time without dying out if the above-mentioned disturbances are occurring frequently at random. This results in business cycles whose duration and amplitude are quite irregular and not uniform.

As a matter of fact, the business cycles in the real world also reveal such irregular pattern. To sum up, "what otherwise shows up as a tendency for the cycle to disappear in case B may be converted into unending sequence of cycles by the addition of randomly disturbed erratic shock system."

In case of the values of multiplier and accelerator falling within the region C, though they generate continued oscillations, the cycles produced by them tend to become 'explosive' (i.e. their amplitude tends to increase greatly). But they are not consistent with the real world situation where oscillations do not become explosive.

However, the values of multiplier and accelerator falling within region C can be made consistent with the actual world situation by incorporating in the analysis the so called buffers. Buffers are the factors which

impose upper limit or ceiling on the expansion of income and output on the one hand or impose a lower limit or floor on the contraction of output and income on the other.

With the inclusion of these buffers the otherwise explosive upward and downward fluctuations arising out of values of multiplier (or MPC) and accelerator (or capital-output ratio) of the region C can become limited cyclical fluctuations, characteristic of the real world situation.

What has been said about case C above also applies to region D where the values of multiplier and accelerator are such that give rise to directly explosive upward or downward movement which can be restrained by the factors determining the ceiling and floor.

However, the adequate explanation of the business cycles in this case would require the reasons why the system starts moving in the reverse direction, say, after striking the ceiling. Hicks in his famous theory of the business cycles provide the reasons which cause movement of the system in the reverse direction after it hits the ceiling or the floor as the case may be. Hick's theory of business cycles will be explained below at length.

Lastly, the case E represents a situation where the business cycles neither try to disappear, nor try to explode, they go on continually with constant amplitude. This however contradicts the real world situation and is quite impossible. This is because in the real world situation, business cycles differ a good deal in amplitude and duration.

#### **Summing Up:**

We have explained the interaction of multiplier and accelerator in case of various values of marginal propensity to consume ( $c$ ) and capital-output ratio ( $v$ ). On the basis of the interaction of the multiplier and accelerator the two categories of business cycle theories have been put forward.

One category of these business cycle theories assumes the values of multiplier and accelerator which generate explosive cycles. For example, Hicks' theory of business cycles falls in this category. On the other hand, Hansen has propounded a business cycle theory based on the interaction of multiplier with a weak accelerator which produces only damped oscillations.

Further, as indicated above, the interaction theories have been modified either by incorporating in the analysis erratic shocks or random disturbances or by including so called buffers which check the upward movement of income and output by imposing ceiling of expansion and checking a downward movement by imposing a floor on the contraction of output.

One of the famous theories of business cycles based on the interaction of multiplier and accelerator which also incorporate buffers in his analysis of fluctuations is that put forward by the noted English economist J.R. Hicks. We discuss below his theory of business cycles in detail.

**Table 27.1. A Multiplier-Acceleration Interaction Model**

<i>Period</i>	<i>Autonomous Investment</i>	<i>Induced Consumption (c = 2/3)</i>	<i>Induced Investment (v = 2)</i>	<i>Change in Income from the base period t</i>
1	2	3	4	5
	Rs. in Crores	Rs. in Crores	Rs. in Crores	Rs. in Crores
<i>t</i>	0	0	0	0
<i>t + 1</i>	10	0	0	10
<i>t + 2</i>	10	6.7	13.4	30.1
<i>t + 3</i>	10	20.0	26.6	56.6
<i>t + 4</i>	10	37.8	35.6	83.4
<i>t + 5</i>	10	55.6	35.6	101.2
<i>t + 6</i>	10	67.6	23.8	101.2
<i>t + 7</i>	10	67.6	0.2	67.8
<i>t + 8</i>	10	51.8	-10.0	51.8
<i>t + 9</i>	10	34.6	-10.0	33.8
<i>t + 10</i>	10	23.0	-10.0	23.0
<i>t + 11</i>	10	15.4	-10.0	15.4
<i>t + 12</i>	10	10.2	-10.0	10.2
<i>t + 13</i>	10	6.8	-6.8	10.0
<i>t + 14</i>	10	6.6	+ 0.2	16.8

### A Numerical Example of the Interaction of the Multiplier and Accelerator:

How the interaction between the multiplier and accelerator gives rise to the cyclical movements in economic activity (as measured by income or output) will become clear from Table 27.1. In formulating this table we have assumed that marginal propensity to consume (c) being equal to 2/3 or 0.66 and capital-output ratio (v) or accelerator being equal to 2. Further, one period time lag has been assumed which implies that an increase in income in a period induces the increase in consumption in the next period.

It is assumed that initially in period  $t + 1$ , autonomous investment is of Rs. 10 crores. In period  $t + 3$ , with autonomous investment being maintained constant at Rs. 10 crores, the deviation of total income in the period  $t + 3$  as compared to the base period will be equal to  $10 + 20 + 26.6 = \text{Rs. } 56.6$  crores.

Similarly, the changes in induced consumption and induced investment and hence in income brought about by the initial increase in autonomous investment of Rs. 10 crores which is maintained throughout, can be found out. It will be seen from column 5 of the Table 27.1 that there are large fluctuations in income.

Under the influence of the interaction between the multiplier and accelerator, the income increases up to the period  $t + 6$ . In other words, period up to  $t + 6$  represents the expansion phase or upswing of the business cycle. Therefore, the period  $t + 6$  is the upper turning point of the business cycle beyond which the contraction phase or downswing of the business cycle begins. It will be further observed that beyond the period  $t + 13$ , income again starts rising that is, recovery from the depression begins.

Thus,  $t + 13$  represents the lower turning point of the business cycle. In this way we see that the interaction between the multiplier and accelerator can give rise to the cyclical movements of the economic activity and its various phases.

It is worth mentioning that we have taken particular values of marginal propensity to consume (which determine the size of the multiplier) and capital-output ratio (which determines the size of the accelerator). The other values of multiplier and accelerator that have been explained above would give rise to the different patterns of fluctuations.

### The Hicks' Theory of Business Cycles (Explained With Diagrams)!

Hicks put forward a complete theory of business cycles based on the interaction between the multiplier and accelerator by choosing certain values of marginal propensity to consume (c) and capital-output ratio (v) which he thinks are representative of the real world situation.

According to Hicks, the values of marginal propensity to consume and capital-output ratio fall in either region C or D of Fig. 27.5. In case values of these parameters lie in the region C, they produce cyclical movements (i.e., oscillations) whose amplitude increases over time and if they fall in region D they produce an explosive upward movement of income or output without oscillations.

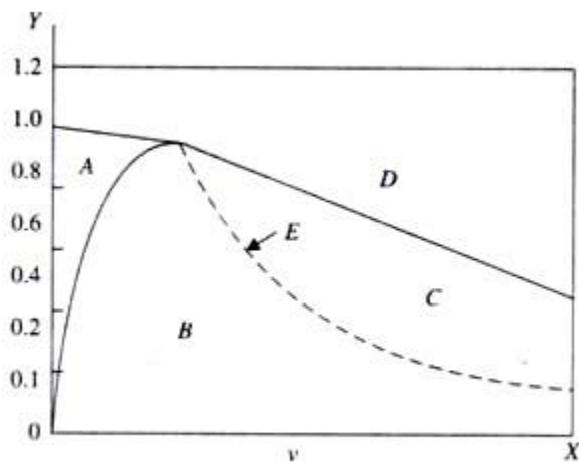


Fig. 27.5. Combinations of  $c$  &  $v$

To explain business cycles of the real world which do not tend to explode, Hicks has incorporated in his analysis the role of buffers. On the one hand, he introduces output ceiling when all the given resources are fully employed and prevent income and output to go beyond it, and, on the other hand, he visualises a floor or the lower limit below which income and output cannot go because some autonomous investment is always taking place.

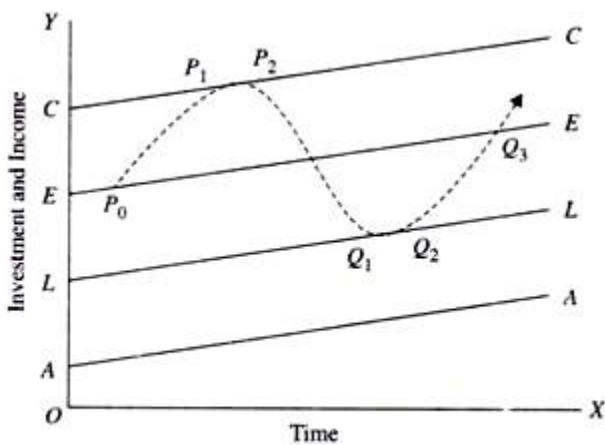


Fig. 27.7. The Hicks' Model of Business Cycles

Another important feature of **Hicks' theory** is that business cycles in the economy occur in the background of economic growth (i.e., the rising trend of real income or output over time). In other words, cyclical fluctuations in real output of goods and services take place above and below this rising line of trend or growth of income and output.

Thus in his theory he explains business cycles along with an equilibrium rate of growth. In Hicks's theory of long-run equilibrium growth that is determined by rate of increase of autonomous investment over time and, therefore, long-run equilibrium growth of income is determined by the autonomous investment and the magnitudes of multiplier and accelerator.

Hicks assume that autonomous investment, depending as it is on technological progress, innovations and population growth, grows at a constant rate. With further assumptions of stable multiplier and accelerator, equilibrium income will grow at the same rate as autonomous investment. It follows therefore that the failure

of actual output to increase along the equilibrium growth path, sometimes to move above it and sometimes to move below it determines the business cycles.

Hick's Theory of business cycles has been explained with the help of the Fig. 27.7. In this figure, AA line represents autonomous investment. Autonomous investment is that investment which is not induced by changes in income and is made by entrepreneur as a result of technological progress or innovations or population growth.

Hicks assume that autonomous investment grows annually at a constant rate given by the slope of the line AA. Given the marginal propensity to consume, the simple multiplier is determined. Then the magnitude of multiplier and autonomous investment together determine the equilibrium path of income shown by the line LL.

Hicks calls this the floor line as this sets the lower limits below which income (output) cannot fall because of a given rate of growth of autonomous investment and the given size of the multiplier. But induced investment has not yet been taken into account. If national income grows from one year to the next, as it would move along the line LL, there is some amount of induced investment via accelerator.

The line EE shows the equilibrium growth path of national income determined by autonomous investment and the combined effect of the multiplier and accelerator. FF is the full employment ceiling. It is a line that shows the maximum national output at any period of time when all the available resources of the economy are fully employed.

Given the constant growth of autonomous investment, the magnitude of multiplier and the induced investment determined by the accelerator, the economy will be moving along the equilibrium growth path line EE. Thus starting from point E, the economy will be in equilibrium moving along the path EE determined by the combined effect of multiplier and accelerator and the growing level of the autonomous investment.

Suppose when the economy reaches point P<sub>0</sub> along the path EE, there is an external shock—say an outburst of investment due to certain innovation or jump in governmental investment. When the economy experiences such an outburst of autonomous investment it pushes the economy above the equilibrium growth path EE after point P<sub>0</sub>.

The rise in autonomous investment due to external shock causes national income to increase at a greater rate than that shown by the slope of EE. This greater increase in national income will cause further increase in induced investment through acceleration effect.

This increase in induced investment causes national income to increase by a magnified amount through multiplier. So under the combined effect of multiplier and accelerator, national income or output will rapidly expand along the path from P<sub>0</sub> to P<sub>1</sub>.

Movement from P<sub>0</sub> to P<sub>1</sub> represents the upswing or expansion phase of the business cycle. But this expansion must stop at P<sub>1</sub> because this is the full employment output ceiling. The limited human and material resources of the economy do not permit a greater expansion of national income than shown by the ceiling line CC.

Therefore, when point P<sub>1</sub> is reached the rapid growth of national income must come to an end. Prof. Hicks assumes that the full employment ceiling grows at the same rate as autonomous investment. Therefore, CC slopes gently unlike the very steep slope of the line from P<sub>0</sub> to P<sub>1</sub>. When point P<sub>1</sub> is reached the economy must grow at the same rate as the usual growth in autonomous investment.

For a short time the economy may crawl along the full employment ceiling CC. But because national income has ceased to increase at the rapid rate, the induced investment via accelerator falls off to the level consistent with the modest rate of growth determined by the constant rate of growth of autonomous investment.

But the economy cannot crawl along its full employment ceiling for a long time. The sharp decline in growth of income and consumption when the economy strikes the ceiling causes a sharp decline in induced investment.

Thus with the sharp decline in induced investment when national income and hence consumption ceases to increase rapidly, the contraction in the level of the income and business actually must begin. Once the downswing starts, the accelerator works in the reverse direction.

That is, since the change in income is now negative the inducement to invest must begin to decrease. Thus there is slackening off at point P2 and national income starts moving toward equilibrium growth path EE. This movement from P2 downward therefore represents the downswing or contraction phase of the business cycle.

In this downswing investment falls off rapidly and therefore multiplier works in the reverse direction. The fall in national income and output resulting from the sharp fall in induced investment will not stop on touching the level EE but will go further down. The economy must consequently move all the way down from point P2 to point Q1. But at point Q1 the floor has been reached.

Whereas the upswing was limited by the output ceiling set by the full employment of available resources, in the downswing the national income cannot fall below the level of output represented by the floor. This is because the floor level is determined by simple multiplier and autonomous investment growing at constant rate, while during the downswing after a point accelerator ceases to operate.

It may be noted that during downswing the limit to negative investment (disinvestment) and therefore the limit to the contraction of output is set by the depreciation of capital stock. There is no way for the businessmen to make disinvestment at a desired rate higher than the depreciation.

When during downswing such conditions arise, accelerator becomes inoperative. After hitting the floor the economy may for some time crawl along the floor through the path Q1 to Q2. In doing so, there is some growth in the level of national income.

This rate of growth as before induces investment and both the multiplier and accelerator come into operation and the economy will move towards Q3 and the full employment ceiling CC. This is how the upswing of cyclical movement again starts.

#### Critical Appraisal:

But Hicks' theory of trade cycles is not without critics. A major weakness of Hicks' theory, according to Kaldor, is that it is based on the principle of acceleration in its rigid form. If the rigid form of acceleration principle is not valid, then the interaction of the multiplier and accelerator which is the crucial concept of the Hicksian theory of trade cycles is not valid.

Thus **Duesenberry** writes, "the basic concept of multiplier-accelerator interaction is important one but we cannot really accept to explain observed cycles by a mechanical application of that concept" and, according to him, Hicks in his business cycle theory actually tries to do so.

It may be noted that **Kaldor** puts forward a theory of business cycles which does not make use of the rigid or strict form of the acceleration principle. In his trade cycle theory Kaldor provides for investment being directly related to the level of income and inversely related to the stock of capital. Thus Kaldor's approach which is also supported by Goodwin abandons the rigid and inflexible relation of investment to changes in income (output) as implied by the rigid acceleration principle [i.e.,  $I_t = I_a + v(Y_{t-1} - Y_{t-2})$ ] and instead has used the following form of the investment function

$$I_t = I_a + gV_t - 1 - jK_t$$

Where  $I_t$  stands for investment in period  $t$ ,  $I_a$  for autonomous investment,  $Y_{t-1}$  for income in the previous period,  $K_t$  for the stock of capital, and  $g$  and  $j$  are constants. A look at the above investment function used by Kaldor will reveal that investment is directly related to the income and inversely related to the stock of capital. Thus in Kaldor-Goodwin investment function, the increase in income, the capital stock remaining constant, will cause an increase in investment which will enlarge the stock of capital.

On the other hand, according to this new investment function, if capital stock increases, output or income remaining constant, investment will fall due to its being negatively related to capital stock. Thus **Kaldor-Goodwin** approach to investment while gives up the rigid acceleration principle but still retains the basic idea of investment related to income because in this approach investment will cause the capital stock to expand towards the stock of capital as desired for the production of output of the preceding year.

However, despite the shortcomings of Hicks' theory of business cycles, this is a valuable contribution to the theory of business cycles. Even its critics such as Kaldor though indicating some of its weaknesses

acknowledge its merit. Thus Kaldor writes that Hicks's theory of trade cycles provides us many brilliant and original pieces of analysis". Duesenberry considers it as an "ingenious piece of work".

### Kaldor's Model of the Trade Cycle (With Diagram)

**Kaldor's theory** of the trade cycle appeared in 1940 just four years after the publication of the General Theory in 1936.

It is a comparatively simple and very neat theory built directly on Keynes' saving- investment analysis.

Although Keynes did devote a lot in the General Theory 'Notes on the Trade Cycle' and laid the basis for further discussion on the subject yet he did not develop a systematic theory of the trade cycle as such.

His theory of the determination of the level of income did not take into consideration the theory of the fluctuations of income, which received at his end a passing and scant attention.

It is important and interesting to note at the very outset that Kaldor's theory of the trade cycle emerges essentially from the substitution of his particular non-linear saving and investment functions for the linear functions used by Keynes in his income model and from his intelligent tracing of the implications that follow from the quite different saving and investment relationships given by the nonlinear functions.

Kaldor in his trade cycle theory does not make use of the acceleration principle in a rigid form. In his model, investment is related directly to the level of income and inversely to the stock of capital. This approach, which is also associated with names like Kalecki and Goodwin, breaks the unrealistic, inflexible tying (or dependence) of investment to changes in output that is implied by the rigid acceleration principle (at the same time retaining the basic idea of the accelerator). Kaldor introduces an important variable that plays a major role in cyclical changes in saving and investment and this variable is the capital stock (K) in the economy.

Saving is a direct function of the capital stock, for any level of income, the greater the capital stock, the larger is the amount of saving. On the other hand, investment is an inverse function of the capital stock, for any given level of income, the greater the capital stock, the smaller is the amount of investment. In Kaldor's cycle theory we try to trace out how the changes in the capital stock, that occur over time, alter the equilibrium situations.

In other words, and in short, instead of the investment function incorporating the strict acceleration principle  $I_t = I_{t-1} + w(Y_{t-1} - Y_{t-2})$ , this approach gives us an investment function, which is like this:  $I_t = I_{t-1} + hY_{t-1} - jK_{t-1}$ ; where  $K$  is the stock of capital at the beginning of the period  $t$  and where  $h$  and  $j$  are constants. The new equation simply means that if output or income ( $Y$ ) increases while the capital stock ( $K$ ) remains constant—investment will rise to increase the capital stock (other things being equal).

If, on the other hand, the capital stock increases while output or income remains constant—investment will fall as the desired stock of capital is (or has been) reached. The main difference between Hicks' model of the trade cycle and Kaldor's model is that the former uses the acceleration principle in its rigid form; while the latter uses it in a way as to avoid some of the shortcomings of the rigid acceleration principle. This is implied by the two equations given above on which investment at a time depends.

Kaldor's model relying on Keynes' model of income determination assumes that the process of change in the business activity is related to the difference between ex-ante saving and investment in the economy. If  $S > I$ , the savings are more than investments and there is a decline in consumer spending which through multiplier will bring a fall in income and business activity. If, on the other hand,  $I > S$ , then the income rises due to increased spending and higher investment. Thus, a discrepancy between ex-ante saving and investment induce a chain of reactions in the level of income till the equilibrium is restored.

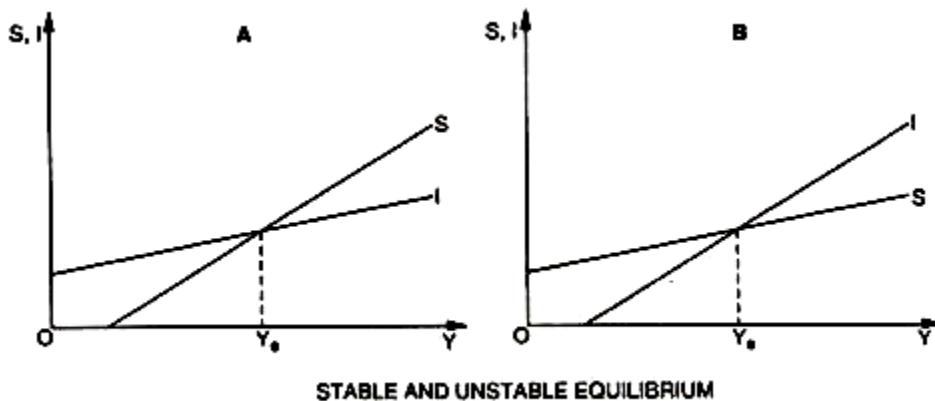
Kaldor, thus, makes both  $S$  and  $I$  depend upon income ( $Y$ ) and stock of capital ( $K$ ), that is:

$$I = I(Y, K)$$

$$S = S(Y, K).$$

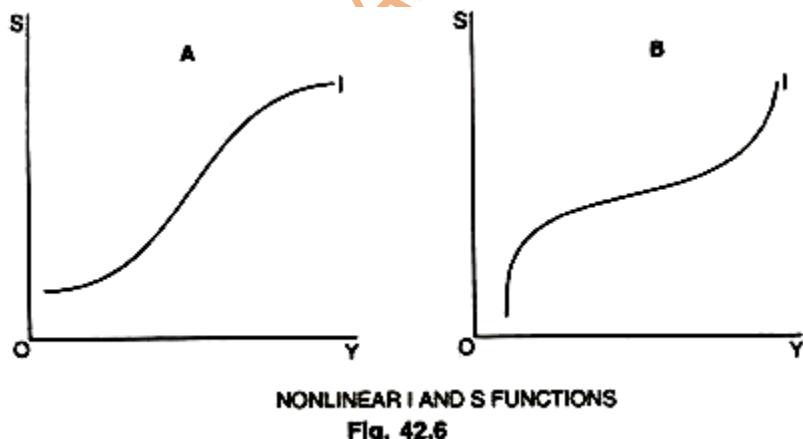
Both  $S$  and  $I$  are usually related to the level of income except in case of deep depression or extreme inflation, so that  $\Delta I / \Delta Y$  and  $\Delta S / \Delta Y$  are normally greater than zero. The behaviour of  $S$  and  $I$  in relation to the stock of

capital, however, shows that saving is related positively with the accumulation of the stock of capital and vice-versa; while investment generally bears an inverse relationship with the stock of capital. The fluctuations (cycle) in the economic system can be traced to the movements of the variables like, I, S, Y and K. Now, if we suppose that S and I functions are linear (straight line curves), Kaldor, then, points out two possibilities as shown in the Fig 42.5.



In part A of the Figure, the equilibrium level of  $Y$  is  $Y_e$ —the only income level at which planned saving and planned investment are equal. With any given pair of linear S and I functions, there is a single equilibrium position and any disturbance that results in a shift in either function or both would tend to be followed by a movement to a new equilibrium position. But from the specific viewpoint of the business cycle, this model offers little help because it shows more stability than appears to be in the real world. In part B, there is again a single equilibrium position but it is unstable one.

Any disturbance producing a movement above,  $Y_e$  means that  $I > S$  and that the income level may rise without limit, first to full employment and then beyond to hyper-inflation. Any disturbance leading to a movement below  $Y_e$  means that  $S > I$  and that the income level would collapse to zero output or income. Part B gives us greater instability than the real world shows. But as an explanation of the business cycle both the cases pointed out by Kaldor are found wanting, one for too much stability and the other for too little. Kaldor, therefore, concludes from this analysis that S and I functions cannot both be linear, at least not over the full range of income during the business cycle. Nonlinear S and I functions appear to conform more closely with the behaviour of saving and investment during the course of cycle as shown in Fig. 42.6.



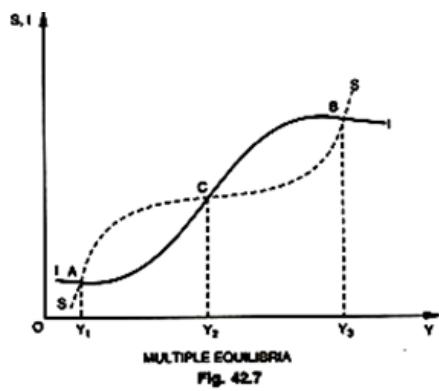
In part A, the curve is almost flat for both relatively high and low income levels and the MPI is almost zero. The MPI is expected to reach zero at low income levels because there is already large excess capacity and rise in income at low point will not induce any investment spending.

Similarly, in case of high level of income, according to Kaldor, MPI will be small because of rising costs of business, construction, borrowing etc. which will discourage entrepreneurs to invest more. Thus, there is a

range of income over which increases in income ( $\Delta Y$ ) will be accompanied by small or zero increments to investment ( $\Delta I$ ) or  $\Delta I / \Delta Y$  will be very small or zero over this range of  $Y$ .

Again in part B, at relatively high and low income levels, the MPS is relatively large compared to its magnitude at normal income levels. During recession when incomes fall to low levels, people cut saving to maintain their previous standards of living and at high income levels, people not only save a large amount but a larger proportion of their income, therefore, the MPS is high. This shifts the distribution of income in favour of profits and away from wages because the MPS of profit seekers is higher than the wage earners. This is reflected in a steep rise of the S function at high income levels.

The Fig. 42.7 has been derived by combining the nonlinear I and S functions as shown below. This figure shows multiple equilibria, with both A and B as stable positions. At income levels below  $Y_1$  or between  $Y_2$  and  $Y_3$   $I > S$ , so the income level rises. At income levels between  $Y_1$  and  $Y_2$  or above  $Y_3$ ,  $S > I$ , so the income level falls. C is an unstable position and, therefore, the income level  $Y_2$  is not a possible equilibrium level.



If income is between  $Y_2$  and  $Y_3$ , it will rise to  $Y_3$ , and if income is between  $Y_1$  and  $Y_2$ , it will fall to  $Y_1$ . It appears that the economy can reach stability only at some high level of income  $Y_3$ , or at some low level of income  $Y_1$ . This, however, does not give us a complete model of business cycle, because a business cycle is made up of alternating expansions and contractions and this figure shows simply two possible positions of stable equilibrium.

According to Kaldor, "The key to the explanation of the trade cycle is to be found in the fact that each of these two positions is stable only in the short period—that as activity continues at either one of these levels, forces gradually accumulate which sooner or later will render that particular position unstable".

If indeed it can be shown that the stable equilibrium at A becomes unstable over time and forces a movement to B, we will have pushed ahead to a model of business cycle. This is apparent from the study of the models given in Fig. 42.8 by Kaldor.

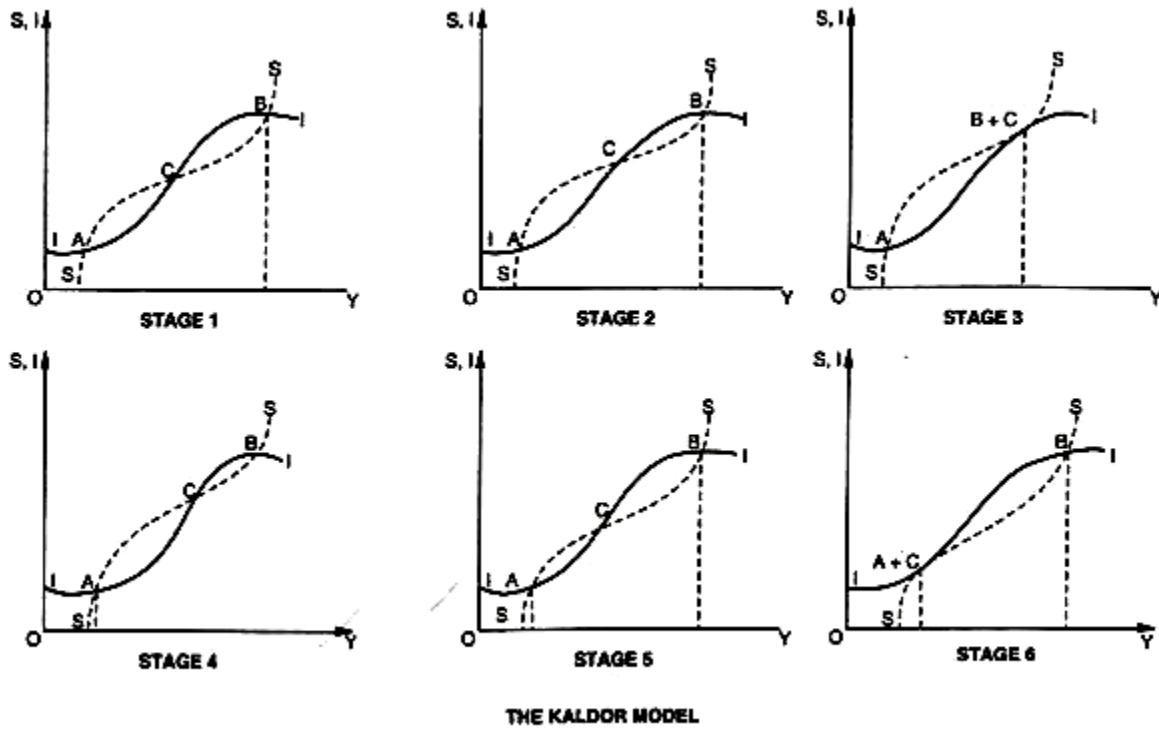


Fig. 42.8

The first stage of the Kaldor model given in Fig. 42.8 corresponds to the figure already given in the above paragraph. We start off in this with the assumption that the economy is in equilibrium position at B, which corresponds to a relatively high or above normal income, at which investment is also high but the higher the rate of investment, the more rapid is the increase in the size of the capital stock.

As the capital stock grows, it means MEC falls, which in turn, leads to a downward shift in the MEI curve, which is denoted here by a downward shift in the I curve (beyond point B). At the same time, the growth in the capital stock of the economy means a growth in the total wealth of the economy which in turn, will tend to push up the saving curve S (beyond point B in stage I of this Figure).

This means there is a rise in the average propensity to save in the economy induced by an increase in its wealth. As shown by stage 2 of the diagram, the downward movement of the I curve and the upward movement of S curve result in a gradual shift to the left in the position of B and a gradual shift to the right in the position of C so that B and C are brought closer to each other.

The critical point is reached when these gradual shifts of the I and S curves make the two curves tangential (tangent to each other at point B) and bring B and C together as is shown in stage 3 of the diagram. Now, at the position of B + C,  $S > I$  in both directions, and the equilibrium is unstable in a downward direction. The cyclical contraction, once started, reduces the income level until a new stable equilibrium is reached at the relatively low level that corresponds with A.

It may be noted that even A is a stable equilibrium only in the short-run. Over time, the S and I curves gradually shift, but now, with the system at a relatively low income level, the I curve shifts upward and the S curve shifts downward as shown by stage 4 in the diagram. If the level of investment corresponding to A is less than replacement requirements some inward shift in the I curve will occur sooner or later on account of replacement reasons alone.

Besides, as the time passes more and more investment opportunities develop, which means the MEC curve will rise and shift to the right pushing up the MEI curve which here would mean an upward shift in the I curve. At the same time, any decline in the capital stock or in the wealth of the economy that occurs during the period of low income will tend to lower the average propensity to save or push the S curve downward.

These shifts cause the position of A to move to the right and that of C to move to the left, thus, bringing A and C close together as is shown from stage 4 and stage 5 in diagrams. Again, the critical point is reached when these gradual shifts of the I and S curves makes the two curves tangential (tangent to each other at point A) and bring A and C together, as shown in stage 6 of the diagram.

The A + C position is unstable in an upward direction, since  $I > S$  on both sides of the position. The cyclical expansion, once started, raises the income level till a new stage of equilibrium is reached at the relatively high level that corresponds with B. The curves, thereafter, are likely to return gradually to the position shown in stage I of the diagram and another cycle begins.

The cyclical process, as described above by Kaldor is, thus, self-generating. The very movement to relatively high income levels brings into play forces, that after a period of time, produced a downward movement to relatively low income levels, and vice-versa. These forces, such as the changing size of the APS and the accumulation and de-cumulation of capital that occur over the cycle, are inherent in the economic process they are endogenous (within the system) forces in the full sense of the term.

One of the most important features of the Kaldor's model of trade cycle is the impact or the importance of the distribution of income because the income of the society is distributed between different classes ( $Y - W + P$  i.e., wages plus profits), each of which has its own propensity to save, the equilibrium can be brought about only under a proper and appropriate distribution of income.

On the one hand, the relations of distribution determine the given level of social saving and, therefore, of investment, on the other hand, achievement of equilibrium (growth rate) requires a given level of investment and, therefore, of saving, which in turn, means corresponding distribution of income (provided the MPS of each class remains unchanged).

According to Kaldor, the introduction of the distribution mechanism (of income) into the model (with the proviso that  $Sp > 5V$  i.e., profit seekers savings are more than wage earners) makes the system more stable and more capable of automatically restoring equilibrium. Here we find Kaldor's model differs materially from Harrod's model. Kaldor believes that any change in I in relation to S—which in Harrod's model will tend to produce cumulative processes of decline or growth in income and production—will set off (in Kaldor's model) the mechanism of income redistribution, which adopts S to the new level of I.

Inflationary processes have an important part to play in this redistribution of income (necessitated by  $I > S$  or  $I < S$ ). Kaldor assumes that when  $I > S$ , the rising investment and the general growth of demand under full employment will result in faster growth of prices than of wages, thereby, changing the distribution of income in favour of profit and reducing the share of the workers.

Because savings from profits are higher than the savings from wages ( $Sp > Sw$ ), this will result in a growth of savings and the equality of S and I will be restored, if, on the other hand, investment and overall demand tends to decline, prices are likely to drop faster than wages, distribution will tend to change in favour of the workers, savings will decline, and the equality of S and I will be restored (though at low equilibrium level). In economic writings the equilibrium, thus, restored through the mechanism of income distribution is called 'Kaldor Effect'.

#### **MONETARY POLICY:**

**Definition:** Monetary policy is the macroeconomic policy laid down by the central bank. It involves management of money supply and interest rate and is the demand side economic policy used by the government of a country to achieve macroeconomic objectives like inflation, consumption, growth and liquidity.

**Description:** In India, monetary policy of the Reserve Bank of India is aimed at managing the quantity of money in order to meet the requirements of different sectors of the economy and to increase the pace of economic growth.

The RBI implements the monetary policy through open market operations, bank rate policy, reserve system, credit control policy, moral persuasion and through many other instruments. Using any of these instruments will lead to changes in the interest rate, or the money supply in the economy. Monetary policy can be

expansionary and contractionary in nature. Increasing money supply and reducing interest rates indicate an expansionary policy. The reverse of this is a contractionary monetary policy.

For instance, liquidity is important for an economy to spur growth. To maintain liquidity, the RBI is dependent on the monetary policy. By purchasing bonds through open market operations, the RBI introduces money in the system and reduces the interest rate.

### Objectives of Monetary Policy:

- ⇒ To maintain price stability (OR control inflation) while keeping in mind the objective of Economic growth.
- ⇒ Price stability is a necessary precondition for a sustainable growth.
- ⇒ Rapid Economic Growth
- ⇒ Exchange Rate Stability
- ⇒ Balance of Payment Equilibrium
- ⇒ Neutrality of Money
- ⇒ Full Employment
- ⇒ Equal Income Distribution

- In May 2016, the Reserve Bank of India (RBI) Act, 1934 was amended to provide a statutory basis for the implementation of the flexible inflation targeting framework.
- **INFLATION TARGET:** The amended RBI Act also provides for the inflation target to be set by the Government of India, in consultation with the Reserve Bank, once in every five years.
- Accordingly, the Central Government has notified in the Official Gazette 4 percent Consumer Price Index (CPI) inflation as the target for the period from August 5, 2016, to March 31, 2021, **with the upper tolerance limit of 6 per cent and the lower tolerance limit of 2 per cent.**
- The Monetary Policy Committee (MPC) constituted by the Central Government under Section 45ZB of RBI ACT determines the policy interest rates required to achieve the inflation target.

### Latest RBI Monetary Policy Rates

(As per RBI's First bi-monthly Monetary Policy Statement for 2017-18 announced on 6th April 2017)

Cash Reserve Ratio (CRR)	4.00% (CRR @ 4.00% has been unchanged since 9th February 2013)
Statutory Liquidity Ratio (SLR)	20.50% (was reduced from 20.75% w.e.f. 1st January 2017)
Bank Rate	6.50% (has been reduced by 25 basis points. Earlier it was 6.75%)
Repo Rate	6.25% (has been unchanged since 4th October 2016)
Reverse Repo Rate	6.00% (hiked by 25 basis points. Earlier it was 5.75%)
Marginal Standing Facility (MSF) Rate	6.50% (has been reduced by 25 basis points. Earlier it was 6.75%)

The next meeting of RBI's Monetary Policy Committee (MPC) is scheduled on 5th and 6th June 2017

RESERVE RATIOS	Minimum	AT PRESENT	Max.Limit
C.R.R.	No limit	4%*	?????
S.L.R.	?????	20.50%*	40%

\*(%age of Net Demand & Time Liabilities)

## INSTRUMENTS OF MONETARY POLICY

### 1. Cash Reserve Ratio

#### *Section 42(1) of RBI Act 1934*

- Under Section 42(1) of RBI Act 1934, All Scheduled Commercial Banks/Cooperative Banks (Public Sector/Nationalised/Private Sector/ Foreign Banks/ RRBS and Coop. Banks) in India are required to deposit a certain proportion of their deposits in the form of cash with RBI.
- Banks don't hold these as cash with themselves.
- This minimum ratio (that is the part of the total deposits to be held as cash) is stipulated by the RBI and is known as the CRR or Cash Reserve Ratio.
- At present, CRR is 4%.**

#### *Example*

- When a bank's deposits increase by Rs.100, and if the CRR is 4%, the banks will have to deposit Rs.4 with RBI and the bank will be able to use only Rs 96 for investments and lending, credit purpose.
- Therefore, higher the ratio, the lower is the amount that banks will be able to use for lending and investment.
- This power of Reserve bank of India to reduce the lendable amount by increasing the CRR makes it an instrument in the hands of a central bank through which it can control the amount that banks lend. Thus, it is a tool used by RBI to control liquidity in the banking system.
- This cash in the form of CRR deposited with RBI is considered as equivalent to holding of cash with themselves and do not carry any Rate of Interest.**

#### *Maintenance of CRR on Daily Basis*

With a view to providing flexibility to banks in choosing an optimum strategy of holding reserves depending upon their intra fortnight cash flows, all SCBs are required to maintain minimum CRR balances up to 95 per cent of the average daily required reserves for a reporting fortnight on all days of the fortnight.

#### *Penalties:*

- Interest is charged as under in cases of default in maintenance of CRR by SCBs:
- In the case of default in maintenance of CRR requirement on a daily basis which is currently 95 percent of the total CRR requirement, penal interest will be recovered for that day at the rate of **3% p.a. above the Bank Rate on the amount by which the amount actually maintained falls short** and if the shortfall continues on the next succeeding day/s, penal interest will be recovered at the rate of 5% p.a. above the Bank Rate.

## 2. Statutory Liquidity Ratio

- Minimum 20.50%- Maximum: 40%
- **Section 24 of Banking Regulations Act 1949,**
- Under Section 24 of Banking Regulations Act 1949, Every bank is required to maintain at the close of business every day, a minimum proportion of their Net Demand and Time Liabilities as liquid assets in the form of: cash, gold and approved securities.
- RBI is empowered to increase this ratio up to 40%. An increase in CRR/ SLR restricts the bank's position to lend more.
- These amounts are not to be deposited with RBI, but to be maintained with the Bank itself.

CRR	SLR
Maintained with RBI	With Bank itself
In cash form only	Can be in Cash/Gold/Govt. securities
Controls liquidity	Controls credit growth

### The purpose of CRR/SLR:

- To control inflation by squeezing money supply.
- To ensure the solvency of Banks.
- To compel banks to invest in govt. securities.

### Solvency of Bank (How ??)

- In the case of any rumour in the society regarding bank's failure, then all the deposits will go into a panic and the bank will not be in a position to repay the deposits at once.
- To save banks from this situation of "Bank-run" also CRR and SLR are maintained.

### NDTL:

- Demand Liabilities: All Saving Deposits and Current Deposits/DDs
- Time Liabilities: FD/RD/Staff Security.

### Bank Rate Policy -

- Bank Rate refers to the official interest rate at which RBI will provide loans to the banking system which includes commercial/cooperative banks, development banks etc.
- Such loans are given out either by direct lending or by rediscounting (buying back) the bills of commercial banks and treasury bills. Thus, bank rate is also known as a discount rate.
- Bank Rate is used by Central Bank of the Country to control and manage the supply of currency for the betterment of the national economy.

**For Example:**

- When unemployment goes up – the Central Bank reduces the Bank Rate so that the cheap funds are available to the Commercial Bank and the Commercial Banks are able to offer Loans to the unemployed Youth at Lower Rate of Interest.
- While extending loans to the Banks at Bank Rate by RBI, **no collateral security is required.**
- Banks borrow money from RBI due to anticipated shortage of money.

**Impact of Bank Rate**

When RBI increases the bank rate:

- The cost of borrowing for banks rises and this credit volume gets reduced leading to decline in the supply of money.
- Thus, increase in Bank rate reflects a tightening of RBI monetary policy.

**3. Repo Rate or Repurchase Rate**

Repo rate, or repurchase rate, is the rate at which RBI lends funds to banks for short periods, generally against Govt. Securities. This is done by RBI buying government bonds from banks with an agreement to sell them back at a fixed rate.

**Govt. Securities:**

- Treasury Notes (Long Term) issued by GOI ranging between 2 to 30 years.
- Treasury Bills (Short Term): 91 days, 182 days, 364 days

**Objective**

- The objective of Repo is to inject liquidity into the system. If RBI wants to make it more expensive for banks to borrow money, it increases the repo rate. Similarly, if it wants to make it cheaper for banks to borrow money, it reduces the repo rate.
- Reduction in Repo Rate helps the commercial Banks to get money at Cheaper Rates and vice versa.

**Difference between Bank Rate and Repo Rate**

- Bank Rate and Repo Rate seem to be similar terms because in both of them RBI lends to the banks.
- Repo Rate is a short-term measure** and it refers to short-term loans and used for controlling the amount of money in the market.
- Bank Rate is a long-term measure** RBI uses this tool to control the money supply.
- Bank Rate borrowing – **No Collateral Security**
- Repo Rate borrowing – **Against securities.**
- Bank Rate is Higher than Repo Rate.**

**4. Reverse Repo Rate**

- Reverse repo rate is the rate of interest at which the RBI borrows funds from other banks **in the short term.** This is done by RBI selling government bonds/securities to banks with the commitment to buy them back at a future date.
- The banks use the reverse repo facility to deposit **their short-term excess funds with the RBI** and earn interest on it. RBI can reduce liquidity in the banking system **by hiking reverse repo rate.**
- RBI uses this tool when it feels that there is too much money floating in the Banking System.
- An increase in Reverse Repo Rate means – Banks will get a higher Rate of Interest from RBI. Banks will prefer to lend money to RBI which is always safe.

### ***Repo Rate v/s Reverse Repo Rate***

**Repo Rate:** Borrowing by Banks from RBI. Means RBI injects money/liquidity in the Banking System.

**Reverse Repo Rate:** Borrowing by RBI from Banks – Means absorption of liquidity from the Banking System.

### ***Reverse Repo (Borrowing by RBI)***

RBI Generally Is Never In A Situation To Borrow Funds From The Banking System. But This Tool Is Used

Whenever Rbi Feels That There Is Enuogh Surplus Money Floating In The Banking System.

Or Whenever There Is Any Borrowing Requirement By The Central Govt. This Tool Is Used.

### ***5. Marginal Standing Facility***

Marginal Standing Facility is a new Liquidity Adjustment Facility (LAF) window created by Reserve Bank of India in its credit policy of May 2011.

MSF is the rate at which the banks are able to borrow overnight funds from RBI against the approved government securities.

**The question is-** when Banks are already able to borrow from RBI via Bank Rate or Repo Rate, then why MSF is needed?

**The answer is that -** this window has been created for commercial banks to borrow from RBI in certain emergency conditions:

- When inter-bank liquidity dries up completely and there is a volatility in the overnight interest rates.
- To curb this volatility, RBI allowed them to pledge G-secs and get more funds from RBI at a rate higher than the repo rate.
- Thus, overall idea behind the MSF is to contain volatility in the overnight inter-bank rates.

**The rate of Interest:** The rate of interest on MSF is above 100 bps above the Repo Rate.

**Max. Borrowing Limit:** The banks can borrow up to 1 percent of their net demand and time liabilities (NDTL) from this facility.

Minimum Amount: Min. Rs. 1 crore and multiples thereof.

### ***6. Open Market Operations***

- Open Market Operations refer to the purchase and sale of the Government securities (G-Secs) by RBI from/to market.
- The objective of Open Market Operations is to adjust the rupee liquidity conditions in the economy.
- When RBI sells government security in the markets, the banks purchase them. When the banks purchase Government securities, they have a reduced ability to lend to the industrial houses or other commercial sectors. This reduced surplus cash, contracts the rupee liquidity and consequently credit creation/credit supply.
- When RBI purchases the securities, the commercial banks find them with more surplus cash and this would create more credit in the system.
- Thus, in the case of excess liquidity, RBI resorts to sale of G-Secs to suck out rupee from the system. Similarly, when there is a liquidity crunch in the economy, RBI buys securities from the market, thereby releasing liquidity.
- It's worth note here that the market for government securities is not well developed in India but still OMO plays very important role.

### ***Qualitative Methods of Credit Control***

- Margin Requirement
- Credit Rationing
- Direct Action
- Moral Persuasion

By Quality we mean the uses to which bank credit is directed.

#### **For example-**

The bank may feel that spectators or the big capitalists are getting a disproportionately large share in the total credit, causing various disturbances and inequality in the economy, while the small-scale industries, consumer goods industries and agriculture are starved of credit.

#### **Marginal Requirement**

The marginal requirement of loan: current value of security offered for loan-value of loans granted. The marginal requirement is increased for those business activities, the flow of whose credit is to be restricted in the economy.

#### ***Example***

- A person mortgages his property worth Rs. 100,000 against the loan. The bank will give a loan of Rs. 80,000 only. The marginal requirement here is 20%.
- In case the flow of credit has to be increased, the marginal requirement will be lowered. Reserve Bank of India has been using this method since 1956.

#### **Rationing of Credit**

Under this method, there is a maximum limit to loans and advances that can be made, which the commercial banks cannot exceed. RBI fixes a ceiling for specific categories. Such rationing is used for situations when credit flow is to be checked, particularly for speculative activities. Minimum of "capital: total assets" (ratio between capital and total asset) can also be prescribed by Reserve Bank of India



#### **Direct Action**

Under the Banking Regulation Act, the central bank has the authority to take strict action against any of the commercial banks that refuses to obey the directions given by Reserve Bank of India. There can be a restriction on advancing of loans imposed by Reserve Bank of India on such banks.



#### ***Example***

RBI had put up certain restrictions on the working of the Metropolitan co-operative banks. Also the 'Bank of Karad' had to come to an end in 1992.

#### ***Moral Persuasion***

This method is also known as "moral persuasion" as the method that the Reserve Bank of India, being the apex bank uses here, is that of persuading the commercial banks to follow its directions/orders on the flow of credit. RBI puts a pressure on the commercial banks to put a ceiling on credit flow during inflation and be liberal in lending during deflation

The Central Government notified the following as factors that constitute the failure to achieve the inflation target:

- (a) the average inflation is more than the upper tolerance level of the inflation target for any three consecutive quarters; or
- (b) the average inflation is less than the lower tolerance level for any three consecutive quarters.

Prior to the amendment in the RBI Act in May 2016, the flexible inflation targeting framework was governed by an Agreement on Monetary Policy Framework between the Government and the Reserve Bank of India of February 20, 2015.

#### **Fiscal Policy of India: Meaning, Objectives and Impacts on the Economy**

Fiscal policy means the use of taxation and public expenditure by the government for stabilization or growth of the economy. According to Culbarston, "By fiscal policy we refer to government actions affecting its receipts and expenditures which ordinarily as measured by the government's receipts, its surplus or deficit."

The government may change undesirable variations in private consumption and investment by compensatory variations of public expenditures and taxes.

Fiscal policy also feeds into economic trends and influences monetary policy. When the government receives more than it spends, it has a surplus. If the government spends more than it receives it runs a deficit. To meet the additional expenditures, it needs to borrow from domestic or foreign sources, draw upon its foreign exchange reserves or print an equivalent amount of money. This tends to influence other economic variables.

On a broad generalization, excessive printing of money leads to inflation. If the government borrows too much from abroad it leads to a debt crisis. Excessive domestic borrowing by the government may lead to higher real interest rates and the domestic private sector being unable to access funds resulting in the "crowding out" of private investment. So it can be said that the fiscal deficit can be like a double edge sword, which need to be tackled very carefully.

### Main Objectives of Fiscal Policy in India

Before moving on the discussion on objectives of India's Fiscal Policies, firstly know that the general objective of Fiscal Policy.

**General objectives of Fiscal Policy are given below:**

1. To maintain and achieve full employment.
2. To stabilize the price level.
3. To stabilize the growth rate of the economy.
4. To maintain equilibrium in the Balance of Payments.
5. To promote the economic development of underdeveloped countries.

Fiscal policy of India always has two objectives, namely improving the growth performance of the economy and ensuring social justice to the people.

**The fiscal policy is designed to achieve certain objectives as follows:-**

**1. Development by effective Mobilisation of Resources:** The principal objective of fiscal policy is to ensure rapid economic growth and development. This objective of economic growth and development can be achieved by Mobilisation of Financial Resources. The central and state governments in India have used fiscal policy to mobilise resources.

**The financial resources can be mobilised by:-**

- a. **Taxation:** Through effective fiscal policies, the government aims to mobilise resources by way of direct taxes as well as indirect taxes because most important source of resource mobilisation in India is taxation.
- b. **Public Savings:** The resources can be mobilised through public savings by reducing government expenditure and increasing surpluses of public sector enterprises.
- c. **Private Savings:** Through effective fiscal measures such as tax benefits, the government can raise resources from private sector and households. Resources can be mobilised through government borrowings by ways of treasury bills, issuance of government bonds, etc., loans from domestic and foreign parties and by deficit financing.

**2. Reduction in inequalities of Income and Wealth:** Fiscal policy aims at achieving equity or social justice by reducing income inequalities among different sections of the society. The direct taxes such as income tax are charged more on the rich people as compared to lower income groups. Indirect taxes are also more in the case of semi-luxury and luxury items which are mostly consumed by the upper middle class and the upper class. The government invests a significant proportion of its tax revenue in the implementation of Poverty Alleviation Programmes to improve the conditions of poor people in society.

**3. Price Stability and Control of Inflation:** One of the main objectives of fiscal policy is to control inflation and stabilize price. Therefore, the government always aims to control the inflation by reducing fiscal deficits, introducing tax savings schemes, productive use of financial resources, etc.

**4. Employment Generation:** The government is making every possible effort to increase employment in the country through effective fiscal measures. Investment in infrastructure has resulted in direct and indirect employment. Lower taxes and duties on small-scale industrial (SSI) units encourage more investment and consequently generate more employment. Various rural employment programmes have been undertaken by the Government of India to solve problems in rural areas. Similarly, self employment scheme is taken to provide employment to technically qualified persons in the urban areas.

**5. Balanced Regional Development:** there are various projects like building up dams on rivers, electricity, schools, roads, industrial projects etc run by the government to mitigate the regional imbalances in the country. This is done with the help of public expenditure.

**6. Reducing the Deficit in the Balance of Payment:** sometimes government gives export incentives to the exporters to boost up the export from the country. In the same way import curbing measures are also adopted to check import. Hence the combined impact of these measures is improvement in the balance of payment of the country.

**7. Increases National Income:** it's the strength of the fiscal policy that brings out the desired results in the economy. When the government wants to increase the income of the country then it increases the direct and indirect taxes rates in the country. There are some other measures like: reduction in tax rate so that more peoples get motivated to deposit actual tax.

**8. Development of Infrastructure:** when the government of the concerned country spends money on the projects like railways, schools, dams, electricity, roads etc to increase the welfare of the citizens, it improves the infrastructure of the country. A improved infrastructure is the key to further speed up the economic growth of the country.

**9. Foreign Exchange Earnings:** when the central government of the country gives incentives like, exemption in custom duty, concession in excise duty while producing things in the domestic markets, it motivates the foreign investors to increase the investment in the domestic country.

## **UNIT-3**

# **DEVELOPMENT & PLANNING**

### **Economic Growth and Development in India:**

The two words 'growth' and 'development' were often used interchangeably in economic discussion.

As soon as 'development eco-nomics' emerged as a distinct field of study after the World War II, it 'had the appearance of being a bastard child of growth economics' and, in fact, this child did not differ from what could be expected from a genuine 'son of growth economics'. But, technically speaking, they are not the same.

To a layman, these two terms appear to be synonymous. However, in the 1950s and 1960s, economists drew a line of demarcation between economic growth and economic development. True enough, the concept of economic development is broader than economic growth. Development is taken to mean 'growth plus change', whereas economic growth means growth only quantitative expansion of an economy. Economic growth is, thus, a quantitative concept, while economic development is a qualitative concept. C. P. Kindleberger says that growth involves focusing on height or weight while development focuses on the change in functional capacity.

Economic growth is defined in positive terms. It is measured by the sustained increase in real, national or per capita income of a nation over time. Economic growth is usually measured in terms of an increase in real GNP or GDP over time or an increase in income per head over time. Growth is desirable as it enables a society to consume more goods and services.

That is why growth is considered to be the basis of advancing real living standards or human welfare. At the same time, it is also true that growth does not necessarily lead to an increase in human welfare. Economic development is more fundamental than economic growth.

### **Economic growth figure does not give us correct assessment of an economy for the following reasons:**

First, economic growth is associated with an increase in GNP/GDP per capita. But per head GNP does not, by itself, constitute or measure welfare or success in development. This is because per capita income does not give any information about income distribution. It is observed that despite high rate of growth, some of the countries experience high incidence of poverty and unemployment.

Secondly, economic growth does not talk about the quality of life. In poor developing countries, people end themselves at low level of literacy, low standards of health and nutrition, etc. Miseries arising from lack of food and shelter do not get reflected in the concept of economic growth.

Thirdly, economic growth does not deal with environmental issues. In the process of achieving higher economic growth, environmental considerations like depletion of renewable natural resources, air pollution, etc., are given little weightage. These aspects have an important bearing on the economic development of a country in the long run. Desire for higher and higher economic growth is associated with environmental damages. It is economic development that cares for environmental issues.

It is, thus, obvious that economic development involves something more than economic growth. In fact, there are certain qualitative dimensions in the process of development that are conspicuous by their absence in the growth or expansion of an economy. Economic development implies both more output and changes in the technical, institutional arrangements by which it is produced, and a change in attitudes and values.

"Development concerns not only man's material needs but also improvement of the social conditions of his life. Development is, therefore, not only economic growth but growth plus change—social, cultural and institutional as well as economic. Development is, thus, not purely an economic phenomenon; it has to be conceived of as a multi-dimensional process."

Naturally, economic development is a value-based concept. It should include not only the acceleration of economic growth but also the reduction of inequality and eradication of poverty, increase in employment opportunities and welfare of the masses, etc.

However, economic development may mean more. Economic development must encompass human development. **Amartya Sen** defines economic development in terms of 'entitlement' and 'capability'. Entitlement refers to the set of alternative commodity bundles that an individual can command through the totality of rights and obligations that he or she faces.

Thus, entitlements of people generate 'capabilities'. Entitlements of people do not only depend on their incomes but also on a host of power relations in a society, the spatial distribution of resources in a society (like facilities of health care and schooling) and what individuals can accumulate from such supplied by the state. 'Capability' represents a person's freedom to achieve various functioning combinations. Thus, the notion of capability is essentially one of freedom the range of options a person has in deciding what kind of life he or she wants to pursue.

Poverty, according to Amartya Sen, is a kind of 'capability deprivation'. Sen says that economic development should be interpreted as a process of expansion of the freedoms that people enjoy. Important areas of unfreedom that people face are famine and undernourishment, mass illiteracy, poor state of health of people, lack of shelter and other basic needs, economic insecurity, denial of basic civil and political liberty, etc.

Through the policies of expansion of human capabilities, development processes can be initiated. That is why it is said that the basic objective of development is the process of expansion of entitlements and human capabilities. That is to say, how GNP growth is used to improve human capabilities and, in turn, how people utilise their capabilities is economic development.

**Amartya Sen**, thus, emphasises that, instead of concentrating on GNP or GDP, development economics should take into account both entitlements and capability expansion. He argues that income does not necessarily address the nature of entitlement. Taking a cue from the Chinese famine (1958-1961) as well as the Bengal famine (1943), he emphatically demonstrated that famines, in general, were to be attributed to the entitlement failure rather than the shortage of food. Despite abundant supplies in food, people had to suffer miserably from hunger and famine in Bengal due to entitlement failure in collecting food from the market. Famine is one source of unfreedom.

#### KEY POINTS:

India has sustained rapid growth of GDP for most of the last two decades leading to rising per capita incomes and a reduction in absolute poverty. Per capita incomes (measured in US \$) have doubled in 12 years

But India has one third of all the people in the world living below the official global poverty line. It has more poor people than the whole of sub-Saharan Africa

Per capita income is \$1,270, placing India just inside the Middle Income Country category

India's per capita income is 1/20th that of the UK

Life expectancy at birth is 65 years and 44% of children under 5 are malnourished. The literacy rate for the population aged 15 years and above is only 63% compared to a 71% figure for lower middle income countries.

Despite a strong attempt to become an open economy, exports of goods and services from India account for only 15% of GDP although this will rise further in the years ahead

India runs persistent trade and fiscal deficits and has suffered from high inflation in recent years

India's growth rate has slowed and high inflation is a constraint on competitiveness and growth.

Investments by Indian businessmen abroad have overtaken foreign direct investment for the first time – reflecting a lack of confidence among Indian entrepreneurs about their home economy

India has followed a different path of development from many other countries. India went more quickly from agriculture to services that tend to be less tightly regulated than heavy industry. That said there are some emerging manufacturing giants in the Indian economy.

Supply-side factors supporting Indian growth and development

A fast-growing population of working age. There are 700 million Indians under the age of 35 and the demographics look good for Indian growth in the next twenty years at least. India is experiencing demographic transition that has increased the share of the working-age population from 58 percent to 64 percent over the last two decades.

India has a strong legal system and many English-language speakers – this has been a key to attracting inward investment from companies such as those specialising in IT out-sourcing.

Wage costs are low in India and India has made strides in recent years in closing some of the productivity gap between her and other countries at later stages of development.

India's economy has successfully developed highly advanced and attractive clusters of businesses in the technology space – witness the rapid emergence of Bangalore as a hub for global software businesses. External economies of scale have deepened their competitive advantages in many related industries.

### **Growth and Development Limiters for India**

Despite optimism for India's prospects for economic growth and development, there are a number of obstacles which may yet see growth and development falter.

Poor infrastructure - notably in transport and power networks

Low productivity and weak human capital. A high % of workers are low-skilled and work in small businesses

High inflation and a persistent trade deficit

Low national savings as a share of GDP, low share of capital investment

Relatively closed economy - India is a net importer of primary products

### **Indian Development – An Infrastructure Gap**

India is a good case study to use when discussing the problems that persist when a country cannot rely on adequate critical infrastructure such as roads, railways, power and basic sanitation. India wants to build \$1 trillion worth of infrastructure in the next five years but the government expects the private sector to fund half of it – this is unlikely! Poor infrastructure hurts the Indian economy in numerous ways:

Causes higher energy costs and irregular energy supplies for nearly every business and especially India's emerging manufacturing sectors – there were huge power black outs in 2012

It is more expensive to transport products across the country and it creates delays at ports hamper export businesses and delays at airports which increases the cost of international freight.

It makes India less attractive to inward FDI

It adds to the cost of living and limits the extent to which millions of India's lowest income families can escape extreme poverty

A creaking infrastructure damages the reputation and potential of India's tourism industry

Despite these growth constraints, India's expansion far exceeds that of the vast majority of developed nations – to put this into some context, India is delivering 30 years of US economic advance every ten years!

### **Relative importance of services in India**

One of the key differences for India contrasted with countries such as China, Japan and South Korea is that the Indian economy is heavily reliant on service industries especially in her export sector

The country has a comparative advantage in many service industries such as business software.

One consequence of this structural difference in the economy is that India has not yet seen the rapid urbanization experienced in other nations; more than 60 per cent Indians still live in rural areas.

Productivity growth in Indian agriculture has been fairly low and this has limited the potential to release people from the land to move into towns and cities and find work in manufacturing sectors.

**Sen says;** "Development requires the re-moval of major sources of unfreedom." The basic condition for economic development are the freedoms from hunger and famine, malnu-trition, deficient schooling, poverty, poor health, economic insecurity, denial of civil and political rights, social inequalities, etc. These human goals of economic development as emphasised by Amartya Sen have brought about a change in development thinking at least since the 1970s.

**Amartya Sen**, carrying on his value-loaded development economics, talks on social jus-tice. He says that undernourishment of chil-dren, absence of opportunities of basic school-ing, lack of entitlement of basic medical at-tention, particularly to the underprivileged of our society, etc., are nothing but social injus-tices.

Since most of these facilities—meant for all Indians crowd out the underdogs through the dominant class or partners of the society. This kind of gross injustice is nothing but denial of development or 'exclusive de-velopment'. Thus, in the development dis-course, social justice a more normative con-cept needs to be provided to all. And, that is development.

## SUSTAINABLE DEVELOPMENT



**Sustainable development** is the organizing principle for meeting human development goals while at the same time sustaining the ability of natural systems to provide the natural resources and ecosystem services upon which the economy and society depend. The desired result is a state of society where living conditions and resource use continue to meet human needs without undermining the integrity and stability of the natural system. Sustainable development can be classified as development that meet the needs of the present without compromising the ability of future generations.

While the modern concept of sustainable development is derived mostly from the **1987 Brundtland Report**, it is also rooted in earlier ideas about sustainable forest management and twentieth century environmental

concerns. As the concept developed, it has shifted to focus more on economic development, social development and environmental protection for future generations. It has been suggested that "the term 'sustainability' should be viewed as humanity's target goal of human-ecosystem equilibrium (homeostasis), while 'sustainable development' refers to the holistic approach and temporal processes that lead us to the end point of sustainability". The modern economies are endeavoring to reconcile ambitious economic development and obligations of preserving the natural resources and ecosystem, the two are traditionally seen as of conflicting nature. Instead of holding climate change commitments and other sustainability measures as a drug to economic development, turning and leveraging them into market opportunities will do greater good. The economic development brought by such organized principles and practices in an economy is called **Managed Sustainable Development (MSD)**.

The concept of sustainable development has been—and still is—subject to criticism. What exactly, is to be sustained in sustainable development? It has been argued that there is no such thing as a sustainable use of a non-renewable resource, since any positive rate of exploitation will eventually lead to the exhaustion of earth's finite stock. The United Nation organized an international conference in Stockholm, Sweden from June 5th to 6th, in 1972AD.

**The Sustainable Development Goals (SDGs)** are a new, universal set of goals, targets and indicators that UN member states will be expected to use to frame their agendas and political policies over the next 15 years. The Sustainable Development Goals (SDGs) follow and expand on the millennium development goals (MDGs), which are due to expire at the end of 2015.

### Sustainable Development Goals (SDGs)

The Sustainable Development Goals (SDGs), are officially known as Transforming our world: the 2030 Agenda for Sustainable Development. There are 17 Sustainable Development Goals, associated 169 targets and 304 indicators. This included the following goals:



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- ❖ End poverty in all its forms everywhere
  - ❖ End hunger, achieve food security and improved nutrition and promote sustainable agriculture
  - ❖ Ensure healthy lives and promote well-being for all at all ages
  - ❖ Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all
  - ❖ Achieve gender equality and empower all women and girls
  - ❖ Ensure availability and sustainable management of water and sanitation for all

- ❖ Ensure access to affordable, reliable, sustainable and modern energy for all
- ❖ Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all
- ❖ Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation
- ❖ Reduce inequality within and among countries
- ❖ Make cities and human settlements inclusive, safe, resilient and sustainable
- ❖ Ensure sustainable consumption and production patterns
- ❖ Take urgent action to combat climate change and its impacts
- ❖ Conserve and sustainably use the oceans, seas and marine resources for sustainable development
- ❖ Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss
- ❖ Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels
- ❖ Strengthen the means of implementation and revitalize the global partnership for sustainable development

### **Millennium Development Goals (MDGs) vs Sustainable Development Goals (SDGs)**

As the MDG deadline approaches, about 100 crore people still live on less than \$1.25 a day – the World Bank measure on poverty. More than 80 crore people do not have enough food to eat. Now let's have a quick look on why we need SDGs.

- ❖ MDGs were too narrow.
- ❖ MDGs failed to consider the root causes of poverty.
- ❖ The millennium development goals made no mention of human rights.
- ❖ In reality MDGs were considered targets for poor countries to achieve from the finance of wealthy countries.
- ❖ Every country will be expected to work towards achieving the SDGs.
- ❖ Goal 16 has a target to promote the rule of law and equal access to justice.
- ❖ MDGs were drawn up by a group of men in the basement of UN headquarters.
- ❖ Establishing post-2015 goals was an outcome of the Rio+20 summit in 2012, which mandated the creation of an open working group to come up with a draft agenda. Alongside the open working group discussions, the UN conducted a series of “global conversations”.

### **IMPORTANCE OF INSTITUTIONS:**

Institutions matter for economic growth and development. This is widely recognised in the economics literature; consider for example the damage to economic prosperity and the risks to human development and welfare in failing states and those in which corruption is deeply embedded among ruling elites.

#### **Institutions are important in**

- ❖ Maintaining the rule of law
- ❖ Protecting property rights for individuals and businesses
- ❖ Operating sound macroeconomic policies - monetary, fiscal, financial and supply-side
- ❖ Encouraging the growth of social capital affecting levels of trust and a willingness to engage in commercial exchange
- ❖ Enhancing the ease of doing business to facilitate enterprise

### **GOVERNMENT & MARKETS:**

The classical economists like Adam Smith, J.S. Say and other advocated the doctrine of laissez faire which means non-intervention of the government in economic matters. Adam Smith introduced the concept of the invisible hand, which refers to the free functioning of the price (market) system in the absence of government intervention.

And, in the 19th century, the western capitalist economics achieved spectacular growth by following the policy of laissez faire. As Paul Samuelson has put it, “An ideal market economy is one where all goods and

services are voluntarily exchanged for money at market prices. Such a system squeezes the maximum benefits out a society's available resources without government intervention".

The doctrine of laissez faire, which means 'leave us alone' held that government should interfere as little as possible in economic affairs and leave economic decisions to the interplay of supply and demand in the market place. However, the great depression of 1929 (which lasted for 4 years) shattered the economies of U.S.A. and other western industrialised countries and forced them to partially abandon the doctrine of laissez faire.

And, in **1936, J.M. Keynes** suggested in his revolutionary book: The General Theory that the visible hand of the government should replace, at least partly, the invisible hand of the market. Following Keynesian prescriptions governments in most countries took on a steadily expanding economic role, regulating monopolies, collecting income taxes and providing social security in the form of unemployment compensation or pension for the old people.

To quote Samuelson again, "in the real world, no economy actually conforms totally to the idealised world of the smoothly functioning invisible hand. Rather, every market economy suffers from imperfections which lead to such ills as excessive pollution, unemployment and extremes of wealth and poverty".

For all these reasons, any government anywhere in the world, whether conservative or liberal, intervenes in economic affairs. In a modern economy like our own, the government has to perform various roles mainly to correct the flaws (defects) of the market mechanism. The military, policy, most schools and colleges, health centres and hospitals and highway and bridge construction are all government activities, research and space exploration require government funding.

Governments may regulate some businesses (such as banking and insurance), while subsidising others (such as agriculture and small-scale and cottage industries). And last, but not the least governments tax their citizens and redistribute the revenues to the poor as also the elderly (retired) people.

#### **Four Main Functions of Government in a Market Economy:**

However, according to Samuelson and other modern economists, governments have four main functions in a market economy — to increase efficiency, to provide infrastructure, to promote equity, and to foster macroeconomic stability and growth.

##### **1. Efficiency:**

First, the government should attempt to correct market failures like monopoly and excessive pollution to ensure efficient functioning of the economic system. Externalities (or social costs) occur when firms or people impose costs or benefits on others outside the marketplace.

##### **2. Infrastructure:**

Secondly, the government should provide an integrated infrastructure. Infrastructure (or social overhead capital) refers to those activities that enhance, directly or indirectly, output levels or efficiency in production.

Essential elements are systems of transportation, power generation, communication and banking, educational and health facilities, and a well-ordered government and political structure. Since the cost of providing these essential services are very high and benefits accrue to numerous diverse groups, such activities are to be financed by the government.

##### **3. Equity:**

Markets do not necessarily produce a distribution of income that is regarded as socially fair or equitable. As market economy may produce unacceptably high levels of inequality of income and wealth. Government programmes to promote equity use taxes and spending to redistribute income toward particular groups.

##### **4. Economic Growth or Stability:**

Fourthly, governments rely upon taxes, expenditures and monetary regulation to foster macroeconomic growth and stability to reduce unemployment and inflation while encouraging economic growth.

Macroeconomic policies for stabilization and economic growth includes fiscal policies (of taxing and spending) along with monetary policies (which affect interest rates and credit conditions). Since the development of macro-economics in the 1930s governments have succeeded in bringing inflation and unemployment under control.

Table 1 presents a framework for classifying the functions of government along a continuum, from activities that will not be undertaken at all without state intervention to activities in which the state plays an activist role in coordinating markets or redistribution assets.

### Perpetuation of Underdeveloped Countries

Let us explain the dependency model of the perpetuation of underdeveloped countries based on Marxist thinking. These models are based on colonial exploitation and dependence of poor underdeveloped countries on the colonial powers that ruled them. These models, like Prebisch-Singer models, involve unequal exchange between the rich developed countries and their underdeveloped and backward colonies which remain poor. Dos Santos, a prominent exponent of this viewpoint, writes, "Development far from constituting a state of backward prior to capitalism is rather a consequence and a particular form of capitalist development known as dependency capitalism".

Furthermore, explaining this dependence of underdeveloped countries on their colonial capitalist power countries he writes "Dependence is a conditioning situation in which the economies of one group of countries are conditioned by the development and expansion of others. A relationship of interdependence between one or more economies or between such economies and the world trading system becomes a dependent relationship when some countries expand through self-impulsion while others being in a dependent position can only expand as a reflection of the dominant countries which may have positive or negative effects on their immediate development. In either case basic situation of dependence causes these countries to be both backward and exploited".

It is evident from above that in this viewpoint the development gap between the developed and underdeveloped countries widened as a result colonialism. The colonial powers which were endowed with technological and commercial abilities along with possession of large amount of capital exploited the poor and underdeveloped countries under their dominance and extracted a part of their produce.

Development, then, was based on international division of labour which allowed industrial development to take place in some countries while preventing it in others. It thus follows that the emergence of colonialism led to a pattern of development different from that which would have occurred if their growth had occurred based mainly on their internal socioeconomic forces. According to this school of thought perpetuation of underdevelopment in the poor developed countries cannot be fully understood without analysing how they came to be conditioned and dominated by colonialism which emerged on world scene as a product of world capitalism.

According to **Marxist thinking**, colonialism is essentially an economic phenomenon under which capitalist development in the Western Europe changed the entire world resulting in the existence of two groups of countries; the colonial power countries and their dependent colonies which they exploited to promote further industrial development in their own countries. With this a particular international division of labour came to prevail under which the poor underdeveloped countries became the suppliers of minerals and agricultural raw materials to their colonial powers that ruled them.

The poor and backward countries were also used as markets for industrial products of the colonial powers. Besides, the industrialists of these colonial powers started investment in mines and plantations of the poor underdeveloped countries and repatriated profits to their home countries.

These industrialists of colonial powers got cheap minerals and agricultural raw materials from their dependent colonies and sold them the industrial products at higher prices. This represents what has come to be called unequal exchange through which the industrial powers exploited the people of poor countries. They invested in those lines of production i.e., minerals and plantations which they exported. They made little investment in the industrial development of the poor underdeveloped countries.

In fact, as has been emphasized by **Gunaer Myrdal**, the industrial growth of the rich countries had a 'backwash effect' on the growth of the underdeveloped countries. The emergence of colonialism and their exploitation of

the poor underdeveloped countries led to their 'de-industrialization'. Thus India's famous handloom industries declined due to their being unable to compete with the products of industrial powers which rendered millions of people unemployed.

### **The Neocolonial Dependence Model:**

It is worth mentioning that even after many years of independence, there has been a revival of colonial dependence in the new form called 'neocolonial dependency model'. According to this, there has been emergence of small elite class consisting of big industrialists enjoying vast political power and social status, the ruling political class consisting of political leaders, landlords whose principal interest, according to Todaro and Smith, "knowingly or not, is in the perpetuation of inequality and inconformity in which they are rewarded".

Elaborating this, Todaro and Smith write, "These special interest groups including multinational corporations, national bilateral agencies and multinational assistance organisations like the World Bank or the International Monetary Fund (IMF) which are tied by allegiance or funding to the wealthy capitalist countries. The elite activities and viewpoints often serve to inhibit any genuine reform efforts that benefit the wider population and in some cases actually lead to even lower levels of living and to the perpetuation of underdevelopment".

In the case of India at present, the reference may be made to some economists and spokesmen of the Indian capitalist class who advocate acceleration of economic growth through increasing the role of private sector, both Indian and foreign investment class and oppose even merit or necessary subsidies to the poor (some of them even oppose food security system meant to ensure minimum amount of food to the poor and special employment guarantee schemes to provide some employment to the poor).

They advocate tax concessions by the government and lower interest rates by banks to accelerate investment to generate higher rate of economic growth. Furthermore, they advocate for flexible labour laws so that the industrialists can retrench workers when it is desired by them. These economists believe that the acceleration of economic growth would automatically remove poverty and unemployment through what has been called trickle-down effect.

Importantly, these elite groups also advocate for wooing foreign investment, both direct and portfolio, (which happen to be investment by multinational corporations (MNCs) to promote growth forgetting that the main interest of these foreign investors are to make profits and repatriate them to their home countries rather than promoting inclusive economic growth. Thus, according to Dos Santos, it has become difficult for breaking out of the dependence on the advanced industrialised countries if one wishes so as they will be opposed by vested interests within the poor underdeveloped countries themselves.

It may be noted, in the neoclassical dependence model, the multinational corporations (MNCs) are seen as the modern form or instrument for expropriation of the surplus generated by the cheap labour of underdeveloped countries. So in one form or another, the poor countries despite having achieved formal political independence remain locked in a system of economic dependence that perpetuates underdevelopment.

### **A Critical Evaluation of Dependency Theory:**

The concept of dependency has provided us a very important insight into the problem of developing countries and their relationship with the developed countries. The relationship in these two types of countries represents dualism of the world. While the developed countries such as US and EU which dominate the world bodies such as UN, IMF, World Bank, WTO still meant that for them trade should be facilitated by reduction of Tariffs on their industrial and agricultural products by the developing countries and reduce subsidies and other support to their farmers.

However subsidies to farmers and provision of food security to the poor are necessary for elimination of poverty. Thus, the tragedy is that poor countries are still dependent on the developed countries for financial capital and technology of various kinds. Thus while the advocates of dependency theory explain the shortcomings of dependence on the advanced industrialised countries, they offer little explanation why poverty and underdevelopment still persist even after several years of gaining independence from colonial

rule. They offer no explanation how to initiate and sustain rapid growth without assistance in one form or the other from the developed countries.

Second, actual experience of developing countries which started development process without the help of much foreign capital and in which public sector played an important role and pursued strategy of import substitution also did not achieve a higher rate of economic growth due to the flaws in their economic policies. Both India and China are examples of such countries.

China having failed in their earlier experience of Marxist and Mao's approach to development had to give up this approach and since 1979 not only switched to the free market economy but also invited foreign investment by multinational corporations to set up industries there and mainly export the industrial products. What is important to note is that this free-market approach and with the help of foreign capital it has been able to become the fastest growing economy of the world. With the achievement of high rate of economic growth, China has been able to reduce significantly its poverty problem. This is due to the fact that its growth has been due to the expansion of labour-intensive manufacturing industries.

Furthermore, when in the early 1990s India faced problems serious balance of payments crisis and high inflation, it also switched over not only to the predominantly free-market economy by adopting IMF directed structural adjustment economic reforms but also opened up the Indian economy to foreign trade and foreign investment, both direct foreign investment and portfolio investment, by foreign institutional investors (FIIs).

These policies were adopted to achieve economic stabilisation and higher rate of economic growth. Though since 1991, India, like China, has also achieved a higher rate of economic growth and has become the second fastest growing economy of the world next only to China. The growth of China and India with the help of foreign investment goes against the main thrust of neocolonial theory of dependence.

However, while in the present circumstances foreign direct investment is welcome, the dependence on foreign portfolio investment is not desirable. The portfolio investment by FIIs may help to meet current account deficit in the short run but from long-run viewpoint of healthy growth it is not good. This is because there is always uncertainty about capital flows by FIIs and creates a lot of volatility in Indian stock market and foreign exchange rate of rupee.

### **Vicious Circle of Poverty**

According to the principle of vicious circle in UDCs' level of income remains low which leads to low level of saving and investment.

Low investment leads to low productivity which again leads to low income.

According to Prof. Nurkse. "It implies circular constellation of forces tending to act and react one another in such a way as to keep a poor country in a state of poverty. He cited an example of a poor man.

A poor man do not get enough food which makes him weak. As a result of weakness his efficiency reduces as a consequence he get low income and thus becomes poor."

### **Solution of Vicious Circle of Poverty:**

Broadly, these two methods to solve the problem of vicious circle of poverty.

#### **They are:**

- (I) Solution to the Supply side
- (II) Solution to the Demand side. Let us explain these two aspects in detail.

#### **A. Solution to Supply Side vicious circle:**

##### **1. Increase in Saving:**

In order to get rid of supply side vicious circle, in these countries; efforts should be made to increase savings so that investment in productive channels may be encouraged. To increase saving, expenditure on marriages, social ceremonies, etc. should be curtailed. In UDCs, the possibilities of voluntary savings are very less.

Thus, in this regard, Govt. interference is necessarily required. The Govt. can increase saving by altering its fiscal policy. The Govt. can impose heavy taxes on luxurious goods. Moreover, it can increase the role of direct taxes. Thus, the Govt. can curtail consumption by doing alterations in tax system.

#### **Increase in Investment:**

To break the vicious circle of poverty apart from increasing savings investment of saving in productive channels is also of immense use. The policies of short run and long run investment should be co-ordinated. By short period investment, people can get the necessary goods at fair rates, which will have favourable impact on their skill.

Moreover, along with short period investment, investment in the establishment of multipurpose projects, iron, chemical fertilizers should be properly encouraged. In UDCs, proper monetary and banking policies should be adopted which may provide facilities and encouragement to small savings.

#### **B. Solution to Demand Side Vicious Circle:**

In UDCs to resolve the demand side vicious circle, extent of the market should be widened so that people may get inducement to invest. In this regard, Prof. Nurkse advocated the doctrine of balanced growth. According to the principle of balanced growth, investment should be done in every sphere of an economy so that demand of one sector can be fulfilled by another sector. Thus, an increase in demand will lead to wider extent of the market and so the inducement to invest.

On the other hand, economists like Hirschman, Singer, Fleming do not consider the policy of balanced growth practically fair. According to them, the policy of unbalanced growth would be more useful. In' UDCs, there is every possibility of increase in demand and there is the need of increase in monetary income. Majority of UDCs have adopted the policy of planned development.

Accordingly, due to more investment in public sector, supply of money increases. Due to increase in monetary income, size of the market get widen. These countries endeavor to widen the size of foreign market by increasing their exports.

#### **C. Other Solution to vicious Circle of Poverty:**

In underdeveloped countries, the main obstacle in economic growth is the backwardness of human power. Many suggestion can be made to increase the skill of human power. For instance, in these countries, education, technical knowledge and administrative training should be enlarged. In these countries health facilities should be enhanced which may increase the efficiency of the workers. Transportation and communication should be developed.

#### **Criticism:**

Numerous economists do not consider vicious circle of poverty as an obstacle in the path of economic development. **According to Prof. Hirschman**, the basic problem of economic development in these countries is the lack of decision making ability. The real problem is the lack of capital.

**According to Prof. Lewis**, "If in these countries lack of capital is not realized during the war period, then ten percent of national income can be easily saved for economic development." Therefore, according to these economists, vicious circle of poverty has been over weighted in these countries.

Moreover, Prof. Bailer, has also criticized the vicious circle of poverty on so many grounds.

**Circle of poverty in UDCs is an easy explanation of nature. However, its main drawbacks has been summarized below:**

1. The doctrine of vicious circle of poverty in UDCs is an easy explanation of nature. There are so many other reasons of vicious circle in these countries.

2. The experience of Latin American countries have proved that underdeveloped countries can also develop.
3. The doctrine of vicious circle neglects the so many important reasons like lack of entrepreneurs, political, social and religious atmosphere.
4. The principle of vicious circle do not explain important determinants of economic development.

### Circular cumulative causation

Circular cumulative causation is a theory developed by Swedish economist Gunnar Myrdal in the year 1956. It is a multi-causal approach where the core variables and their linkages are delineated. The idea behind it is that a change in one form of an institution will lead to successive changes in other institutions. These changes are circular in that they continue in a cycle, many times in a negative way, in which there is no end, and cumulative in that they persist in each round. The change does not occur all at once as that would lead to chaos, rather the changes occur gradually.

Gunnar Myrdal developed the concept from Knut Wicksell and developed it with Nicholas Kaldor when they worked together at the United Nations Economic Commission for Europe. Myrdal concentrated on the social provisioning aspect of development, while Kaldor concentrated on demand-supply relationships to the manufacturing sector.

### Theories of Underdevelopment: Baran's View on Underdevelopment

By the decade of seventies of the 20th century, the theory of the stages of economic growth became redundant and the structural internationalist theory became prominent. The structuralist approach looks at development in terms of the power relationship between different nations and between different people within the nation.

The theory visualizes development as a process in which less developed countries are caught up in dependence and dominance relationship with rich countries and these subordinate countries suffer from institutional and structural constraints.

There are two views regarding how dependence of under-privileged countries upon the fortunate ones is treated as destined in the modern approach of economic development:

(a) One viewpoint is that not only the rich countries desire to have their hegemony over poor countries but also that the elite of a country, such as landlords, businessmen, bureaucrats, trade union leaders and entrepreneurs, support the sly intention of rich countries because they are rewarded for doing so. Todaro quotes a statement from Theotonio Dos Santos of Latin America, which is one of the most forceful statements regarding dependency nature of development:

... Underdevelopment far from constituting a state of backwardness prior to capitalism is rather a consequence and a particular form of capitalist development known as dependent capitalism... dependence is a conditioning situation in which the economies of one group of countries are conditioned by the development and expansion of others.

A relationship of inter-dependence between two or more economies or between such economies and the world trading system becomes a dependent relationship when some countries can expand through self-impulsion while others, being in a dependent position can only expand as a reflection of the expansion of dominant countries which may have positive or negative effect on their immediate development.

In either case the basic situation of dependence causes these countries to be both backward and exploited. Dominant countries are endowed with techno-logical, commercial, capital and socio-political predominance over dependent countries.

(b) The other view that Todaro calls the "false paradigm" model is that the underdevelopment of the countries of Asia, Africa and Latin America is result of the inappropriate and faulty advice provided to them by the assisting agencies like UNESCO, ILO, UNDP, IMF etc.

The intentions of the advisers may not be doubted as they are well-meaning experts but they are often ignorant of the existing situations of the target countries. The policies based on their meticulous expert

advice prove inappropriate and reinforce the existing power structure and cater to the interests of powerful groups as these countries are beset with the acute problem of social, economic and landed inequalities.

Thus, both the views of structural internationalist model emphasize that the development would be more meaningful when the attention is drawn not only to the growth of GNP but rather to the planning of poverty reduction and employment to all.

The process of development is dualistic in nature. There are countries which have confined themselves to proceeding faster upon what has widely been accepted as the path of development and there are other countries which have not yet confined and refuse to move as fast as the former. These situations have naturally moved ahead to form dual societies: one treated as superior and the other inferior.

The theories of underdevelopment are essentially dependency theories. This model relates to the scholars like Andre Gunder Frank, Samir Amin, Immanuel Wallerstein and H. Magdoff. Paul Baran, in his work *The Political Economy of Growth* (1973, first published in 1957), pioneered the theory of underdevelopment.

This model views underdevelopment of the less developed countries as a consequence of the fact that the developed rich countries exercise dominance and imperialist assertion over the former. In his book *Dependency is dead: Long Live Dependency and Class Struggle* written in 1974, Frank under-lines the growth of class struggle between the rich and poor nations, which would aggravate due to aggressive policies of the former.

Samir Amin's contributions *Class and Nations: Historically and in Current Crisis* (1979), *Crisis of Nationalism and Socialism* (1982), *De-linking: Towards a Polycentric World* (1990), *Euro-centrism* (1989) and *Mal-development: Anatomy of a Global Failure* (1990) are replete with evidences that bear out the role of rich countries in underdevelopment and backwardness of the colonial less developed countries of the world.

Modern economic history, as most of the social science literature, has been so written in the beginning as to establish the supremacy of the West. The Eurocentric interpretation asserts that the development of the Asian, African and Latin American countries is a result of positive contribution of the West.

Indian and Chinese contributions to the development of Europe have been ignored. The other side of 'Europeanism' was 'orientalism', equally contemptuous of the non-Western world and, therefore, was criticized by Edward Said and Samir Amin (1989) in their writings against Eurocentrism. Europeanism is reflected even in the Marxist conceptualization of The Asiatic Mode of Production.

### **Baran's Views on Underdevelopment:**

Paul Baran is of the view that capitalism, due to its inherent characteristics, exploits the Third World. It is in the interest of the capitalist world to keep the backward world as an indis-pensable hinterland. These less developed countries were the source of raw material and extracting economic surplus for the rich countries.

Most of the colonizers, according to Baran, were "rapidly determined to extract the largest possible gains from the host countries and to take their loot home" (1973: 274). Likewise, the per capita income, which is in paucity as compared to the rich countries, is a result of the capitalist development in the West.

This economic standoff could be got rid of through socialist economic system. Baran was a promoter of the Marxist approach to economic planning. He believed that the existing class structure of the Third World countries has also been responsible for their dependent situation.

The surplus of such countries was largely wasted, first by the 'lumpen-bourgeoisie' which included moneylenders, real estate agents and others who are considered to be non-productive and parasitic, and secondly by domestic industrial producers who were monopolistic, and believed in discouraging competition.

Baran is completely socialistic in his view and considers the present pattern of development to be capitalistic which is certainly exploitative. He wishes a society which is free from exploitation and that could be possible only in the socialist economy.

Baran's obsession for the Soviet model of economic development forces one to consider him to be as Utopian as Marx and Gandhi whose approaches have been possible to contemplate but impossible to implement.

### **What is the Human Development index (HDI) ?**

HDI is a composite statistic used as an index to rank countries the level of "human development". The statistic is composed from statistics for life expectancy, education, and standard of living, collected at the national level using a predetermined formula. The HDI looks beyond GDP for a better definition of well being. It provides a composite measure of three dimension of human development:

- (i) Living a long and healthy life (measured by life expectancy),
- (ii) Being educated (measured by literacy and gross enrolment in education)
- (iii) Having a decent standard, of living (measured by purchasing power parity, PPP, income).

The index is not a comprehensive measure of human development. It does not include important indicators such as gender or income inequality nor concepts like respect for human rights and political freedoms. But it provides a broadened prism for viewing human progress and the complex relationship between income and well-being.

### **How was HDI Formulated?**

The origins of the HDI are to be found in the United Nations Development Programs(UNDP) Human Development Reports (HDRs). These were devised and launched by Pakistani Economist Mahbubul in 1990 with the purpose of shifting the focus of development economics from national income accounting to people centered policies.

### **How does India fare in the Human Development Report of 2009,?**

Between 1980 to 2007, India's HDI rose by 1.33% annually from 0.427 to 0.612. HDI scores in all regions have increased progressively over the years although there have been periods of slower growth or even reversals.

The Human Development Report of 2009 pertains to figures 'for 2007. As per this Report, India ranks 134th out of 182 nations, With an HDI of 0.612. With Life expectancy of 63.4 years we ranked 128th among 176 nations, with adult Literacy Rate of 66 % we ranked 120 among 150s. Our Combined Gross Enrolment ratio of 61 % placed us at rank 134 among 177 nations and our per capita GNI of \$2753 placed us at rank 128 among 181 nations.

### **What is Human Poverty Index?**

Human Poverty Index or HPI-1 focuses on the proportion of people below certain threshold levels in each of the dimensions of the Human Development Index - living a long and healthy life, having access to education, and a decent standard of living. By looking beyond income deprivation, the HPI -1 represents a multi-dimensional alternative to the \$1.25 a day (PPP US\$) poverty measure.

The HPI-1 measures severe deprivation in health by the proportion of people who are not expected to survive to age 40. Education is measured by the adult illiteracy rate. And a decent standard of living is measured by the un weighted average of people not using an improved water source and the proportion of children under age 5 who are underweight for their age .

With an HPI-1 value of 28.0% India, ranks 88th among 135 countries for which the index has been calculated.

With 15.5% people not having the probability to live beyond 40, India ranks 105th among 153 countries, with 11% people not using improved water source India ranked 76th among 150 countries, with Adult Literacy rate of 34% India was at rank 120 among 151 countries and with 46% children underweight for their age we ranked 138 countries.

### **What is Gender Related Development Index?**

Introduced in Human Development Report 1995, Gender related Development Index or GDI measures achievements in the same dimensions using the same indicators as the HDI but captures inequalities in achievement between women and men. It is simply the HDI adjusted downward for gender inequality. The

greater the gender disparity in basic human development, the lower is a country's GDI relative to its HDI. India's GDI value, 0.594 should be compared to its HDI value of 0.612. Its GDI value is 97.1 % of its HDI value. Out of the 155 countries with both HDI and GDI values, 138 countries have a better ratio than India's.

### **What are Millennium Development Goals ?**

The Millennium Development Goals or MDGs are eight turnaround goals that provide concrete, numerical benchmarks for tackling extreme poverty in its many dimensions. Adopted by world leaders in the year 2000 and set to be achieved by 2015, the MDGs are both global and local, tailored by each country to suit specific development needs. They provide a framework for the entire international Community to work together towards a common end - making sure that human development reaches everyone, everywhere. The eight goals include -

- (1) Eradicating extreme poverty and hunger;
- (2) Achieving universal primary education;
- (3) Promoting gender equality ~a empowering women;
- (4) Reducing child mortality;
- (5) Improving maternal health;
- (6) Combating HIV/AIDS, malaria and other diseases;
- (7) Ensuring environmental sustainability;
- (8) Developing global partnership for development.

These goals further break down into 21 quantifiable targets that are measured by 60 indicator.

### **Classical Theory of Economic Development**

The classical economists had explained growth process in terms of rate of technological progress and population growth.

In their opinion, technological progress remains in lead for some time but finally it disappears when the falling rate of profit prevents further accumulation of capital.

It is at this stage that the economy slumps down into stagnation.

In broad way, the classical theory of economic development may be stated as: suppose an expected increase in profits brings about an increase in investment which adds to the existing stock of capital and to the steady flow of improved techniques. This increase in capital accumulation raises the wage fund. Higher wages induce an accelerated population growth which causes the demand for food to rise. Food production is raised by employing additional labour and capital. But diminishing returns to land bring about rise in labour cost and as a result, the price of corn goes up.

In turn, rents increase, wages rise, thereby reducing profits. Reduction in profit implies reduction in investment, retarded technological progress, diminution of wage fund and slowing down of population growth and capital accumulation. "In the classical model, the end result of capitalist development is stagnation... This stagnation resulted from the natural tendency of profits to fall and consequent chopping off capital accumulation". When this happens, capital accumulation ceases, population becomes constant and stationary state sets in.

### **Mathematical Explanation:**

The basic proportions of classical theory of growth can be explained in terms of mathematical equation as this makes the model brief simple and easy.

### **Proposition 1.**

### The production Function:

The total output of an economy depends upon the size of labour, the stock of capital, the amount of available natural resources and available technology. Thus, it expresses a function relationship between dependent and independent valuables i.e.

$$Q = f(L, K, N, T)$$

$Q$  = Total output

$L$  = Size of labour

$K$  = Stock of capital

$N$  = Amount of available natural resources.

$T$  = Technology.

$N$  is constant because it cannot be increased quantitatively, but its quality can be improved by advanced technology. So the total output ultimately depends upon labour force, stock of capital and technology.

### Proposition 2:

Technological progress depends on investment.

The relation between technological progress and investment is  $T = f(I)$

i.e. the technology depends upon the size of investment i.e. why classical economists stressed on capital accumulation and saving rather than technological progress.

### Proposition 3:

Investment depends on profits.

It is true that investment depends upon profits. The capitalist will make investment only if it is profitable. Here investment means net addition to the existing stock of capital i.e.

$$I = \Delta K = f(R)$$

$K$  = Net addition to capital stock.

$R$  = Return on capital investment or profit.

### Proposition 4:

Profits depend, upon labour supply and level of technology.

According to classical economists, profit is the function of labour supply and technological progress. The application of improved technology in agriculture can raise productivity and hence profits. Thus, profits are not only influenced by the level of technology, but by labour force as well.

$$R = F(T, L)$$

The level of technology depends upon the level of investment and it depends on profits. Profits, in turn, depend on the level of technology. This argument explains the interdependence of these factors.

$$T = f(I)$$

$$= f[I(R)]$$

$$= f\{R(T, L)\}$$

The crux of this circular argument is that technical progress is vital for economic development.

**Proposition 5:**

The size of labour force depends on size of the wage fund.

This proposition explains the iron law of wages. If the wage fund is raised, the size of the labour force will be large and vice-versa. The people in past did not visualize that population growth could adversely affect their standard of living. Under these circumstances, the classical theory of population establishes a relation between size of labour and the wage fund.

$$L = f(W)$$

W = Wage fund.

L = Size of labour force.

**Proposition 6:**

Size of labour force depends upon level of investment.

The classical economists believed that wage fund depends upon the savings of the capitalist and these savings find their way in investment automatically. So wage fund is the function of investment or investment determines the size of wage fund, i.e.

$$W = f(I)$$

Where I = Level of Investment

W = Wage fund.

**Proposition 7:****Closing equation:**

There are six equations above having 7 variables. So their value cannot be determined. The system determines when the number of unknowns is equal to the number of the equations and operational function is of the form.

$$Q = R + W$$

Q = Total output

R = Profits

W = Wages.

i.e. the output is the sum of profits and wages together.

The seventh equation of classical theory are as under.

**The seventh equation of classical theory are as under.**

$$Q = f(L, K, N, T)$$

$$T = f(I)$$

$$I = \Delta K = [f(R)]$$

$$R = f(T, L)$$

$$L = f(W)$$

$$W = f(I)$$

$$Q = R + W$$

**The circulatory system can be stated as:**

The economic development implies in the level of output. This increase is possible due to the application of improved technology, which in turn, depends upon the level of investment. The investment is determined by the level of profit. The level of profits will be determined by the size of wage fund which, in turn, will influence the labour force or population growth. Population growth will necessitate the discovery of new scientific inventions for raising the total output.

**The circulatory system may be stated as:**

$$Q \rightarrow T \rightarrow I \rightarrow R \rightarrow W \rightarrow L \rightarrow Q$$

In the classical model, the end result of development activity is the stationary state. The stationary state in the opinion of the classicalists was essentially a concept of mature economy and, thus, it should not be interpreted as something characterised by under development.

### Karl Marx Theory of Economic Development

Karl Marx, the father of scientific socialism, is considered a great thinker of history.

He is held in high esteem and is respected as a real prophet by the millions of people.

**Prof. Schumpeter wrote,**

"Marxism is a religion. To an orthodox Marxist, an opponent is not merely in error but in sin".

He is regarded as the father of history who prophesied the decline of capitalism and the advent of socialism.

The Marxian analysis is the greatest and the most penetrating examination of the process of economic development. He expected capitalistic change to break down because of sociological reasons and not due to economic stagnation and only after a very high degree of development is attained. His famous book 'Das Kapital' is known as the Bible of socialism (1867). He presented the process of growth and collapse of the capital economy.

### Assumptions of the Theory:

#### Marxian economic theory of growth is based on certain assumptions:

1. There are two principal classes in the society. (1) Bourgeoisie and (2) Proletariat.
2. Wages of the workers are determined at subsistence level of living.
3. Labour theory of value holds good. Thus labour is the main source of value generation.
4. Factors of production are owned by the capitalists.
5. Capital is of two types: constant capital and variable capital.
6. Capitalists exploit the workers.
7. Labour is homogenous and perfectly mobile.
8. Perfect competition in the economy.
9. National income is distributed in terms of wages and profits.

### Marxian Concept of Economic Development:

In Marxian theory, production means the generation of value. Thus economic development is the process of more value generating, labour generates value. But high level of production is possible through more and more capital accumulation and technological improvement.

At the start, growth under capitalism, generation of value and accumulation of capital underwent at a high rate. After reaching its peak, there is a concentration of capital associated with falling rate of profit. In turn, it

reduces the rate of investment and as such rate of economic growth. Unemployment increases. Class conflicts increase. Labour conflicts start and there is class revolts. Ultimately, there is a downfall of capitalism and rise of socialism.

### SCHUMPETER'S MODEL OF ECONOMIC DEVELOPMENT

**Schumpeter assumes** a perfectly competitive economy which is in stationary equilibrium. In such a stationary state ,there is perfect competitive equilibrium. no profits, no interest rates, no savings, no investments and no involuntary unemployment. This equilibrium is characterized by the term "circular flow", continues to repeat itself every year. In the circular flow, the same products are produced every year in same manner.

According to him economic development "is spontaneous and discontinuous change in the channels of the circular flow, disturbance of equilibrium, which forever alters and displaces the equilibrium state previously existing"

Development consists in the carrying out of new combinations for which possibilities exist in the stationary state. New combinations come about in the form of **INNOVATIONS**

#### INNOVATIONS

An **innovations** may consist of:

- 1.The introduction of a new product
- 2.The introduction of new method of production
- 3.The opening up of a new market
- 4.The conquest of a new source of raw materials
- 5.The carrying out of a new organization of any industry like the creation of monopoly

According to Schumpeter ,it is the introduction of new product and the continual improvements in the existing ones that lead to development.

#### ROLE OF INNOVATOR

✖ Schumpeter assigns the role of an innovator not to the capitalist but to the entrepreneur. The entrepreneur is not a man of ordinary managerial ability, but one who introduces something entirely new. The entrepreneur is motivated by:

- a)The desire to find a private commercial kingdom
- b)The will to conquer and prove his superiority
- c)The joy of creating ,of getting things done ,or simply of exercising one's energy and ingenuity.

To perform his economic condition ,the entrepreneur requires two thing :

first ,the existence of technical knowledge in order to produce new ;  
second, the power of disposal over the factors of production in the form of credit.

#### ROLE OF PROFITS

✖ An entrepreneur innovates to earn profits.

✖ Profits are conceived "as a surplus over costs :a difference between the total receipts and outlay -as a function of innovation

✖ According to Schumpeter ,under competitive equilibrium the price of each product just equals its cost of production and there no profits. Profits arise due to dynamic changes resulting from an innovation. They continue to exist till the innovation becomes general.

#### BREAKING THE CIRCULAR FLOW

✖ Schumpeter's model starts with the breaking up of the circular flow with an innovation in the form of a new product by an entrepreneur for the purpose of earning profit.

✖ In order to break the circular flow ,the innovating entrepreneurs are financed by bank-credit expansion.

✖ Investment in innovation is risky, they must pay interest on it. Once the new innovation becomes successful and profitable, other entrepreneurs follow it.

✖ Innovations in one field may induce other innovations in related fields. The emergence of motor car industry may in, in turn ,stimulate a wave of new investments in the construction of highways ,rubber tyre etc

#### CYCLICAL PROCESS

✖ Investment is assumed to be financed by creation of bank credit.

✖ It increases money incomes and prices and helps to create a cumulative expansion throughout the economy.

- ✖ With the increase in purchasing power of the customers, the demand for the products of the old industries increases to the supply.
- ✖ Price rise ,profit increase and old industries expand by borrowing from the banks. It induces a secondary wave of credit,inflation which is superimposed or the primary wave of innovation
- ✖ After a period the new products start appearing in the market displacing the old products and enforcing process of liquidation and readjustment.
- ✖ The demand for old product is decreased. Their price fall. some are even forced to run into liquidation.
- ✖ As though innovators start repaying bank loans out of profits, the quantity of money is decreased and prices tends to fall. profit decline. Uncertainty &the impulse for innovation is reduced.
- ✖ Depression entered

Analysis begun with the assumption that country's economic performance is in rigid condition, i.e., there are no population growth and net investment, and high level of unemployment. Some entrepreneurs committed to reformation and followed by other entrepreneurs until there is an increase in investment

✖ The impacts are increasing in society's income and consumption. This phenomena will lead the entrepreneurs to increase the new capital. - induced investment - increasing of investment because of increasing in income , production and profit. - autonomous investment – investments which determined by long-term development, such as new resources found and technology which can create reformation.

The economic development (booming period) will be followed by economic recession - some entrepreneurs who cannot compete with those entrepreneurs whose have done reformation will subsequently failed in their business and lost their market and have to close their business.

- creation of new products will lead to uncertainty among the entrepreneurs in terms investment and capital that are needed for business development
- Those entrepreneur who are able to create the new products and market will lead to economic booming However, the equilibrium point is higher than the economic recession period.
- With the new equilibrium, the level of per capita income is higher

#### PROCESS AT THE END OF CAPITALISM

- ✖ Three forces are discernible, that are the beginning of the creeping death of capitalism. They are ;
- (1)The decadence of the entrepreneurial function
- (2)The disintegration of bourgeoisie family; and
- (3)The destruction of the institutional frame work of the capitalist society.
- ✖ Overruling over class-wage people
- ✖ The tendency towards concentration into big concerns weakens and destroys the twin institutions of private property and freedom of contract.
- ✖ As a result of clashing of groups capitalism results crumbling and there is a gradual movements towards socialism.
- ✖ At the end capitalism would fade away.

#### CRITICISMS OF THEORY

- ✖ 1.The entire process of Schumpeter's theory is based on the innovator whom he regards as an ideal person
- ✖ 2.economic development is the result of the cyclical process
- ✖ 3.Cyclical changes due to innovation is not correct
- ✖ 4.Schumpeter regards innovation as the main cause of economic development
- ✖ 5.Too much importance to bank –credit

#### Harrod Domar Model

The Harrod Domar Model suggests that economic growth rates depend on two things:

Level of Savings (higher savings enable higher investment)

Capital-Output Ratio. A lower capital-output ratio means investment is more efficient and the growth rate will be higher.

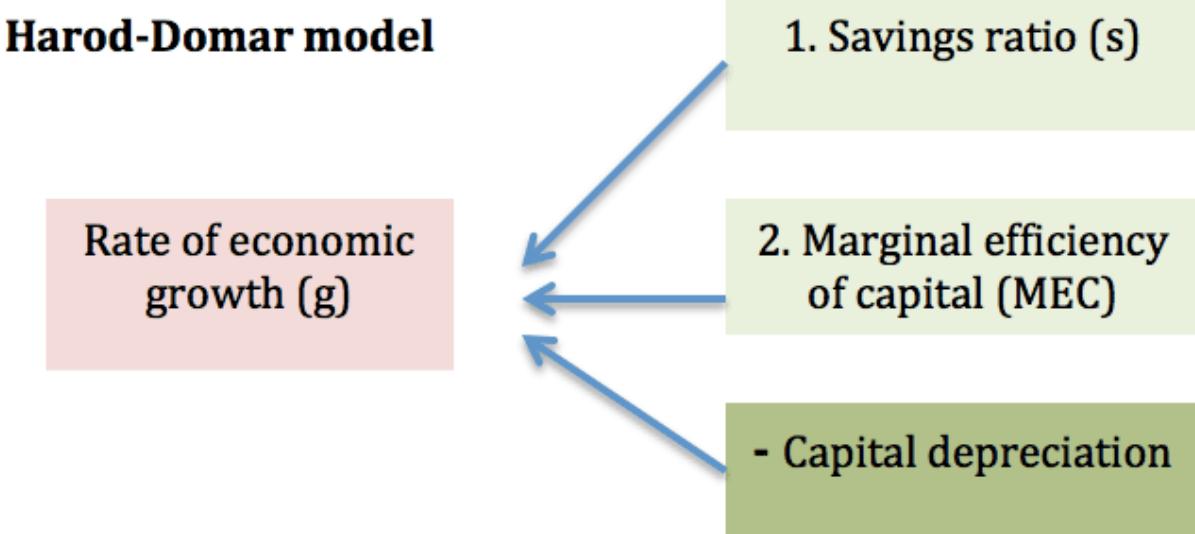
A simplified model of Harrod-Domar:

$$\text{Rate of economic growth (g)} = \frac{\text{Level of savings (s)}}{\text{Capital output ratio (k)}}$$

Harrod-Domar in more detail

- Level of savings (s) = Average propensity to save (APS) – which is the ratio of national savings to national income.
- The capital-output ratio = 1/marginal product of capital.
  - The capital-output ratio is the amount of capital needed to increase output.
  - A high capital output ratio means investment is inefficient.
  - The capital-output ratio also needs to take into account the depreciation of existing capital

#### Main factors affecting economic growth



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- Level of savings. Higher savings enable greater investment in capital stock
- The marginal efficiency of capital. This refers to the productivity of investment, e.g. if machines costing £30 million increase output by £10 million. The capital-output ratio is 3
- Depreciation – old capital wearing out.

#### Warranted Growth Rate

Roy Harrod introduced a concept known as the warranted growth rate.

- This is the growth rate at which all saving is absorbed into investment. (e.g. £80bn of saving = £80bn of investment).
- Let us assume, the saving rate is 10%. the Capital output ratio is 4. In other words, £10bn of investment increases output by £2.5bn
- In this case, the economy's warranted growth rate is 2.5 percent (ten divided by four).
- This is the growth rate at which the ratio of capital to output would stay constant at four.

### The Natural Growth Rate

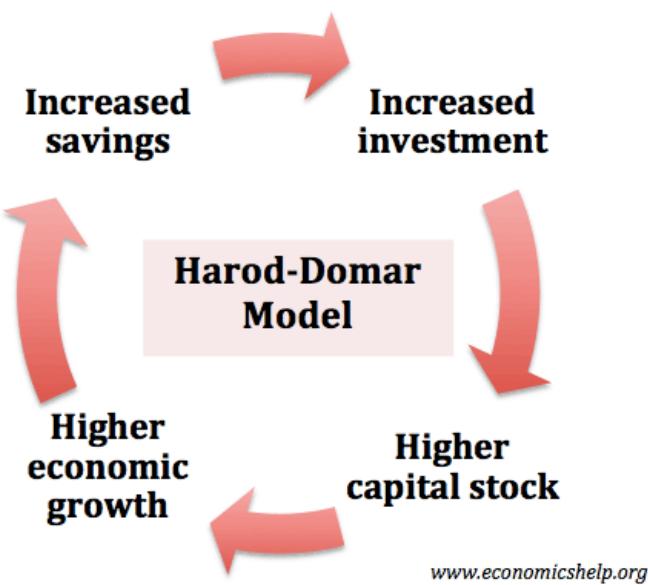
- The natural growth rate is the rate of economic growth required to maintain full employment.
- If the labour force grows at 3 percent per year, then to maintain full employment, the economy's annual growth rate must be 3 percent.
- This assumes no change in labour productivity which is unrealistic.

### Importance of Harrod-Domar

It is argued that in developing countries low rates of economic growth and development are linked to low saving rates.

This creates a vicious cycle of low investment, low output and low savings. To boost economic growth rates, it is necessary to increase savings either domestically or from abroad. Higher savings create a virtuous circle of self-sustaining economic growth.

### Impact of increasing capital



The transfer of capital to developing economies should enable higher growth, which in turn will lead to higher savings and growth will become more self-sustaining.

### Criticisms of Harrod Domar Model

- Developing countries find it difficult to increase saving. Increasing savings ratios may be inappropriate when you are struggling to get enough food to eat.
- Harrod based his model on looking at industrialised countries post-depression years. He later came to repudiate his model because he felt it did not provide a model for long-term growth rates.
- The model ignores factors such as labour productivity, technological innovation and levels of corruption. The Harrod Domar is at best an oversimplification of complex factors which go into economic growth.
- There are examples of countries who have experienced rapid growth rates despite a lack of savings, such as Thailand.
- It assumes the existence of a reliable finance and transport system. Often the problem for developing countries is a lack of investment in these areas.
- Increasing capital stock can lead to diminishing returns. Domar was writing during the aftermath of the Great Depression where he could assume there would always be surplus labour willing to use the machines, but, in practice, this is not the case.
- The Model explains boom and bust cycles through the importance of capital, (see [accelerator theory](#)) However, in practice businesses are influenced by many things other than capital such as expectations.

- Harrod assumed there was no reason for the actual growth to equal natural growth and that an economy had no tendency to full employment. However, this was based on the assumption of wages being fixed.
- The difficulty of influencing saving levels. In developing economies it can be difficult to increase savings ratios – because of widespread poverty.
- The effectiveness of foreign capital flows can vary. In the 1970s and 80s many developing economies borrowed from abroad, this led to an inflow of foreign capital however, there was a lack of skilled labour to make effective use of capital. This led to very high capital-output ratios (poor productivity) and growth rates didn't increase significantly. However, developing economies were left with high debt repayments and when interest rates rose, a large proportion of national savings was diverted to paying debt repayments.
- Economic development implies much more than just economic growth. For example, who benefits from growth? does higher national income filter through to improved health care and education. It depends on how the capital is used.

### **Neoclassical Theory of Economic Growth**

The neoclassical growth theory was developed in the late 1950s and 1960s of the twentieth century as a result of intensive research in the field of growth economics.

The American economist Robert Solow, who won a Nobel Prize in Economics and the British economist, J. E. Meade are the two well known contributors to the neo-classical theory of growth. This neoclassical growth theory lays stress on capital accumulation and its related decision of saving as an important determinant of economic growth. Neoclassical growth model considered two factor production functions with capital and labour as determinants of output. Besides, it added exogenously determined factor, technology, to the production function.

**Thus neoclassical growth model uses the following production function:**

$$Y = AF(K, L) \dots (i)$$

Where Y is Gross Domestic Product (GDP), K is the stock of capital, L is the amount of un-skilled labour and A is exogenously determined level of technology. Note that change in this exogenous variable, technology, will cause a shift in the production function.

There are two ways in which technology parameter A is incorporated in the production function. One popular way of incorporating the technology parameter in the production function is to assume that technology is labour augmenting and accordingly the production function is written as

$$Y = F(K, AL) \dots (ii)$$

Note that labour-augmenting technological change implies that it increases productivity of labour.

The second important way of incorporating the technology factor in the production function is to assume that technological progress augments all factors (both capital and labour in our production function) and not just augmenting labour. It is in this way that we have written the production function equation (i) above. To repeat, in this approach production function is written as

$$Y = AF(K, L)$$

Considering in this way A represents total factor productivity (that is, productivity of both factor inputs). When we empirically estimate production function specified in this way, then contribution of A to the growth in total output is called Solow residual which means that total factor productivity really measures the increase in output which is not accounted for by changes in factors, capital and labour.

Unlike the fixed proportion production function of Harrod-Domar model of economic growth, neoclassical growth model uses variable proportion production function, that is, it considers unlimited possibilities of substitution between capital and labour in the production process.

That is why it is called neoclassical growth model as the earlier neoclassical considered such a variable proportion production function. The second important departure made by neoclassical growth theory from

Harrod-Domar growth model is that it assumes that planned investment and saving are always equal because of immediate adjustments in price (including interest).

With these assumptions, neo-classical growth theory focuses its attention on supply side factors such as capital and technology for determining rate of economic growth of a country. Therefore, unlike Harrod-Domar growth model, it does not consider aggregate demand for goods limiting economic growth. Therefore, it is called 'classical' along with 'neo'.

The growth of output in this model is achieved at least in the short run through higher rate of saving and therefore higher rate of capital formation. However, diminishing returns to capital limit economic growth in this model. Though the neoclassical growth model assumes constant returns to scale which exhibits diminishing returns to capital and labour separately.

We explain below how neoclassical growth model explains economic growth through capital accumulation (i.e., saving and investment) and how this growth process ends in steady state equilibrium. By steady 'State equilibrium for the economy we mean that growth rate of output equals growth rate of labour force and growth rate of capital (i.e.,  $\Delta Y/Y = \Delta L/L = \Delta K/K$ ) so that per capita income and per capita capital are no longer changing.

Note that for income per capita and capital per worker to remain constant in this steady state equilibrium when labour force is growing implies that income and capital must be growing at the same rate as labour force. Since growth in labour force (or population) is generally denoted by letter in this steady state equilibrium, therefore,  $= \Delta Y/Y = \Delta K/K = \Delta N/N = n$ . Neoclassic growth theory explains the process of growth from any initial portion to this steady state equilibrium.

### **Neoclassical Growth Theory: Production Function and Saving:**

As stated above, neoclassical growth theory uses following production function:

$$Y = AF(K, L)$$

However, the neoclassical theory explains the growth process using the above production function in its intensive form, that is, in per capita terms. To obtain the above production function in per capita terms we divide both sides of the given production function by  $L$ , the number of labour force. Thus

$$Y/L = AF(K/L, L/L)$$

$$= AF(K/L, 1) = AF(K/L) \dots (2)$$

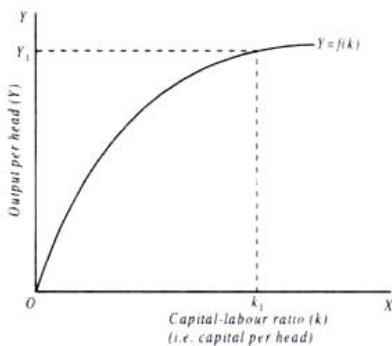
To begin with we assume that there is no technological progress. With this assumption then equation (2) is reduced to

$$Y/L = F(K/L) \dots (3)$$

The equation (3) states that output per head ( $Y/L$ ) is a function of capital per head  $K/L$ . Writing  $y$  for  $Y/L$  and  $k$  for  $K/L$ , equation (3) can be written as

$$y = f(k) \dots (4)$$

Now, in Figure 45.1 we represent the production function (4) in per capita terms. It will be noticed from Figure 45.1 that as capital per capita ( $k$ ) increases output per head increases, that is, marginal product of labour is positive. But, as will be seen from Figure 45.1, the slope of the production function curve decreases as capital per head increases. This implies that marginal product of capital diminishes.



**Fig. 45.1. Production function relating output per head to output per head**

That is, the increase in capital per head causes output per head to increase but at a diminishing rate. It will be seen from the Figure 45.1 that at capital-labour ratio (i.e. capital per worker) equal to  $k_1$  output per head is  $y_1$ . Similarly we can read from the production function curve:  $y = f(k)$  the output per head corresponding to any other capital per head.

#### Neoclassical Growth Theory: Fundamental Growth Equation:

According to neoclassical theory, rate of saving plays an important role in the growth process of an economy. Like the Harrod-Domar model, neoclassical theory considers saving as a constant fraction of income. Thus,

$$S = sY \dots (5)$$

Where  $S$  = saving

$Y$  = income

$s$  = propensity to save

Since  $s$  is a constant fraction of income, average propensity to save is equal to marginal propensity to save. Further, since national income equals national product, we can also write equation (5) as

$$sY = sF(K, L)$$

As in neoclassical theory planned investment is always equal to planned saving, net addition to the stock of capital is ( $\Delta K$ ), which is the same thing as investment ( $I$ ), can be obtained by deducting depreciation of capital stock during a period from the planned saving. Thus,

$$\Delta K = I = sY - D \dots (6)$$

Where  $\Delta K$  = net addition to the stock of capital,  $I$  stands for investment and  $D$  for depreciation. Depreciation occurs at a certain percentage of the existing capital stock. The total depreciation ( $D$ ) can be written as

$$D = dK$$

Substituting  $dK$  for  $D$  in equation (6) we have

$$\Delta K = sY - dK$$

$$\text{or } sY = \Delta K + dK \dots (7)$$

Now dividing and multiplying the first term of the left hand side of equation (7) by  $K$  we have

$$sY = K \cdot \frac{\Delta K}{K} + dK \dots (8)$$

We have seen above, for the steady state equilibrium, growth of capital ( $\Delta K/K$ ) must be equal to growth of labour force ( $\Delta L/L$ ), so that capital per worker and therefore income per head remains constant. If we denote growth rate of labour force ( $\Delta L/L$ ) by  $n$ , then in steady state  $\Delta K/K = n$ .

Substituting  $n$  for  $\Delta K/K$  in equation (8) we have

$$sY = K \cdot n + dK$$

$$\text{or } sY = (n + d)K \dots (9)$$

The above equation (9) is a fundamental growth equation of the neoclassical growth model and states the condition for the steady state equilibrium when capital per worker and therefore income per capita remains constant even though population or labour force is growing.

Thus, for steady state growth equilibrium capital must be increasing equal to  $(n + d) K$ . Therefore  $(n + d) K$  represents the required investment (or change in capital stock) which ensures steady state when capital and income must be growing at the same rate as labour force (or population)

### **The Growth Process:**

From the growth equation (9) it is evident that if planned saving  $sY$  is greater than the required investment (i.e.  $(n + d) K$ ) to keep per capita income constant, capital per worker will increase. This increase in capital per worker will cause increase in productivity of worker.

As a result, the economy will grow at higher rate than the steady-state equilibrium growth rate. However, this higher growth rate will not occur endlessly because diminishing returns to capital will bring it down to the steady rate of growth, though at a higher levels of per capita income and capital per worker.

In order to graphically show the growth process the growth equation is conventionally used in intensive form, that is, in per capita terms. In order to do so we divide both sides of equation (9) by  $L$  and have

$$sY/L = (n + d) K/L$$

where  $Y/L$  represents income per capita and  $K/L$  represents capital per worker (i.e. capital-labour ratio)

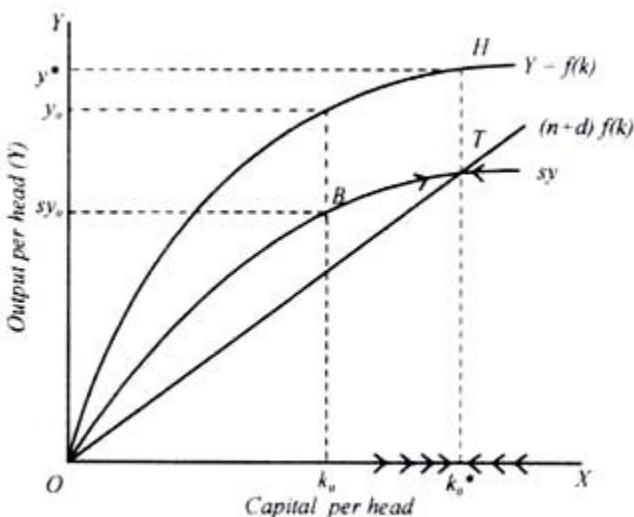
Writing  $y$  for  $Y/L$  and  $k$  for  $K/L$  we have

$$sy = (n + d)k \dots (10)$$

The equation (10) represents fundamental neoclassical growth equation in per capita terms.

### **Growth Process and Steady Growth Rate:**

Figure 45.2 shows the growth process that moves the economy over time from an initial position to the steady state equilibrium growth rate. In this Figure 45.2 along with per capita production function ( $y = f(k)$ ) we have also drawn per capita saving function curve  $sy$ . Besides, we have drawn  $(n + d) k$  curve which depicts required investment per worker to keep constant the level of capital per capita when population or labour force is growing at a given rate  $n$ .



**Fig. 45.2. Neoclassical Model : Growth Process and Steady State Equilibrium**

In Figure 45.2  $y = f(k)$  is per capita production function curve as in Figure 45.1. Since per capita saving is a constant fraction of per capita output {i.e. income}, the curve  $sy$  depicting per capita saving function is drawn below the per capita output function curve ( $y = f(k)$ ) with the same shape. Another straight line curve labelled as  $(n + d) k$ , is drawn which depicts the required investment to keep capital per head (i.e., capital-labour ratio) constant at various levels of capital per head.

Now, let us assume the current capital per head is  $k_0$  at which per capita income (or output) is  $sy_0$  and per capita saving is  $sy_0$ . It will be seen from Figure 45.2 that at capital per head  $k_0$ , per capita saving  $sy_0$  exceeds investment required to maintain capital per head equal to  $k_0$  ( $sy_0 > (n + d)k_0$ ).

As a result, capital per head ( $k$ ) will rise (as indicated by horizontal arrows) which will lead to increase in per capita income and the economy, moves to the right. This adjustment process will continue so long as  $sy > (n + d)k$ . It will, seen when the economy reaches at capital per head equal to  $k^*$  and per capita income equal to  $y^*$  corresponding to which saving curve  $sy$  intersects the  $(n + d)k$  curve at point T.

It will be noticed from Figure 45.2 that the adjustment process comes to rest at capital per head equal to  $k^*$  because saving and investment corresponding to this state is equal to the investment required to maintain capital per head at  $k^*$ . Thus point T and its associated capital per head equal to  $k^*$  and income or output per head equal to  $y^*$  represent the steady state equilibrium.

It is worth noting that whether the economy is initially at the left or right of  $k^*$ , the adjustment process leads to the steady state at point T. It may however be noted that in steady-state equilibrium, the economy is growing at the same rate as labour force (that is, equal to  $n$  or  $\Delta L/L$ ).

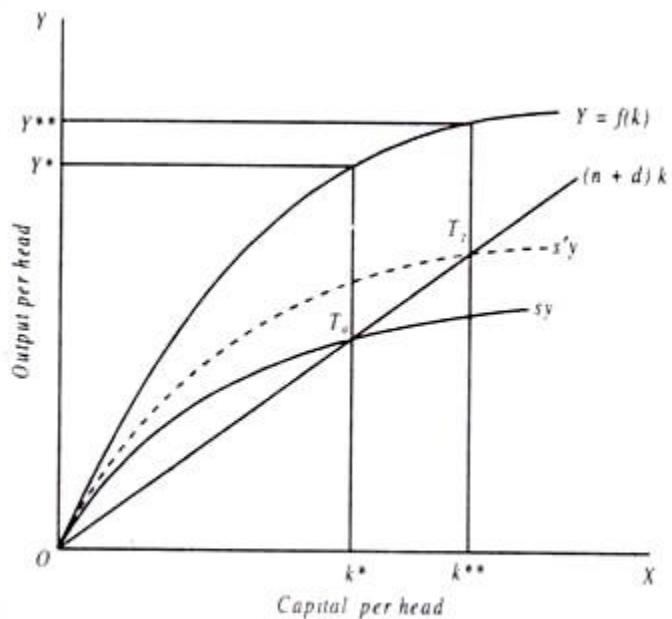
It will be seen from Figure 45.2 that although growth of economy comes down to the steady growth rate, its levels of per capita capital and per capita income at point T are greater as compared to the initial state at point B.

An important economic implication of the above growth process visualised in neoclassical growth model is that different countries having same saving rate and population growth rate and access to the same technology will ultimately converge to same per capita income although this convergence process may take different time in different countries.

#### Impact of Increase in the Saving Rate:

As has been explained above that in steady state, both capital per head ( $k$ ) and income per head ( $y$ ) remain constant when economy is growing at the rate of growth of population or labour force . In other words, in steady state equilibrium  $\Delta K = 0$  and  $\Delta Y = 0$ .

It follows from this that steady state growth rate or long-run growth rate which is equal to population or labour force growth rate  $n$  is not affected by changes in the saving rate. Changes in the saving rate affect only the short-run growth rate of the economy. This is an important implication of neoclassical growth model.



**Fig. 45.3. Impact of Increase in Saving Rate**

Now an important question is why do we get this apparently incredible result from the neoclassical growth theory. Impact of increase in the saving rate is illustrated in Figure 45.3. It will be seen from this figure that initially with the saving curve  $sy$ , the economy is in steady state at point  $T_0$  where the saving curve  $sy$  intersects required investment curve  $(n + d)k$  with  $k^*$  as capital per head and  $y^*$  as income (output) per capita.

Now suppose that saving rate increases, that is, individuals in the society decide to save a higher fraction of their income. As a result, saving curve shifts to the new higher position  $s'y$  (dotted). This higher saving curve  $s'y$  intersects the  $(n + d)k$  curve at point which therefore represents the new steady state.

We thus see that increase in saving rate moves the steady state equilibrium to the right and causes both capital per head and income per head to rise to  $k^{**}$  and  $y^{**}$  respectively. Note that in the new steady state the economy grows at the same rate as the growth rate of labour force (or population) which is denoted by  $n$ . It therefore follows that long-run growth rate of the economy remains unaffected by the increase in the saving rate though the steady state position has moved to the right.

Two points are worth noting here. First, though long-run growth rate of the economy remains the same as a result of increase in the saving rate, capital per head ( $k$ ) and income per capita ( $y$ ) have risen with the upward shift in the saving curve to  $s'y$  and consequently the change in steady state from  $T_0$  to  $T_1$ , capital per head has increased from  $k^*$  to  $k^{**}$  and income per head has risen from  $y^*$  to  $y^{**}$ .

However, it is important to note that in the transition period or in the short run when the adjustment process is taking place from an initial steady state, to a new steady state a higher growth rate in per capita income is achieved. Thus, in Figure 45.3 when with the initial steady state point  $T_0$ , saving rate increases and saving curve shifts upward from  $sy$  to  $s'y$ , at the initial point  $T_0$ , planned saving or investment exceeds  $(n + d)k$  which causes capital per head to rise resulting in a higher growth in per capita income than the growth rate in labour force ( $n$ ) in the short run till the new steady state is reached.

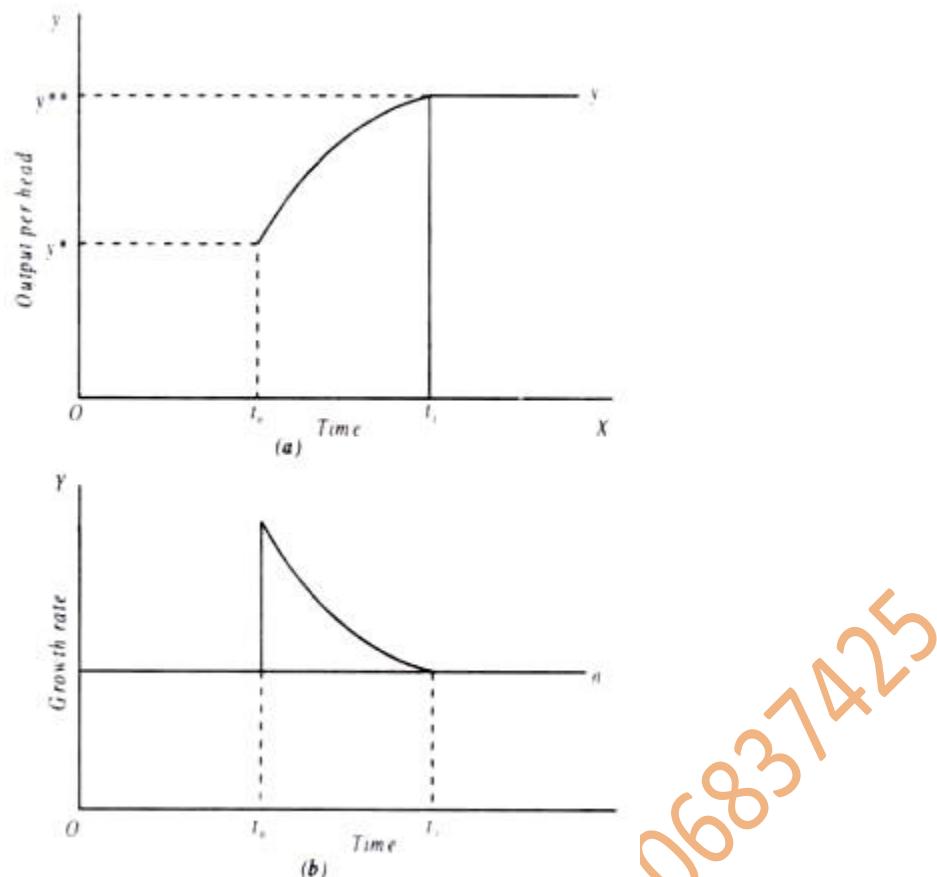


Fig. 45.4

The effect of increase in saving on growth in output or income per head ( $y$ ) and growth rate of total output (i.e.,  $\Delta Y/Y$ ) is shown in Figure 45.4(a) and 45.4(b). Figure 45.4(a) shows the growth in output (income) per head as a result of increase in the saving rate. To begin with, the economy is initially in steady state equilibrium at time  $t_0$  with output per head equal to  $y^*$ .

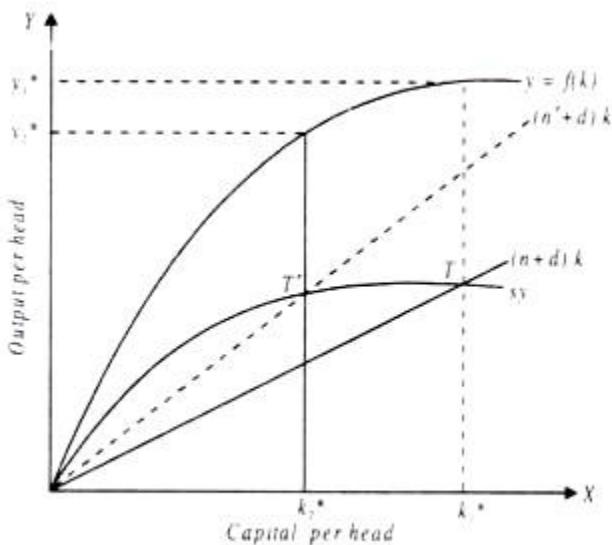
The increase in saving rate causes capital per head to rise which leads to the growth in output per head till time  $t_1$  is reached. At time  $t_1$ , the economy is again in steady state equilibrium but now at a higher level  $y^{**}$  of output per head. Note that in the transition period from  $t_0$  to  $t_1$  output per head increases but at a diminishing rate.

Figure 45.4 (b) illustrates the adjustment in growth rate in total output from Figure 45.4 (a) that starting from initial steady state at time  $t_0$  the increase in saving rate and capital formation leads to growth rate in total output higher than the steady growth rate  $n$  in the period from  $t_0$  to  $t_1$  but in period  $t_1$  it returns to the steady growth rate path  $n$ .

It is thus evident that the higher saving rate leads to a higher growth rate in the short run only, while long-run growth rate in output remains unaffected. The increase in the saving rate raises the growth rate of output in the short run due to faster growth in capital and therefore in output. As more capital is accumulated, the growth rate decreases due to the diminishing returns to capital and eventually falls back to the population or labour force growth rate ( $n$ ).

#### **Effect of Population Growth:**

For developing countries like India it is important to discuss the effect of increase in population growth rate on steady levels of capital per head ( $k$ ) and output per head ( $y$ ) and also on the steady-state rate of growth of aggregate output.



**Fig. 45.5 Effect of Population Growth Rate on Capital Per Head, Output Per Head, and Steady Growth Rate**

Figure 45.5. Illustrates these effects of population growth. An increase in population growth rate causes an up-ward shift in  $(n + d)$   $k$  line. Thus in Figure 45.5, the increase in population growth rate from  $n$  to  $n'$  causes upward shifts of  $(n + d)$   $k$  to  $(n' + d)$   $k$  curve dotted.

It will be seen from the Figure 45.5 that the new  $(n' + d)$   $k$  curve cuts the given saving curve  $sy$  at point  $T'$  at which capital per head has decreased from  $k^*1$  to  $k^*2$  and output per capita has fallen from  $y^*1$  to  $y^*2$ . This can be easily explained.

Due to higher growth rate of population a given stock of capital is spread thinly over labour force which results in lower capital per head (i.e. capital-labour ratio). Decrease in capital per head causes decline in per capita output. This is an important result of neoclassical growth theory which shows that population growth in developing countries like India impedes growth in per capita income and therefore multiplies our efforts to raise living standards of the people.

The Figure 45.5 also shows that higher growth rate of population raises the steady-state growth rate. It will be seen from this figure that increase in population growth rate from  $n$  to  $n'$  causes  $(n + d)$   $k$  curve to shift upward to the new position  $(n' + d)$   $k$  (dotted) which intersects the saving curve at new steady-state equilibrium point  $T'$ .

The steady state growth rate has therefore risen to  $n'$ , that is, equal to the new growth rate of population. It may however be noted that higher steady rate of growth is not a desirable thing. As a matter of fact, a higher steady growth means that to maintain a certain given capital-labour ratio and per capita income the economy has to save and invest more.

This implies that a higher rate of population acts as an obstacle to raise per capita income and therefore living standards of the people. Thus, this result provides a significant lesson for the developing countries like India, that is, if they want to achieve higher living standards for its people they should make efforts to control population growth rate.

#### Long-run Growth and Technological Change:

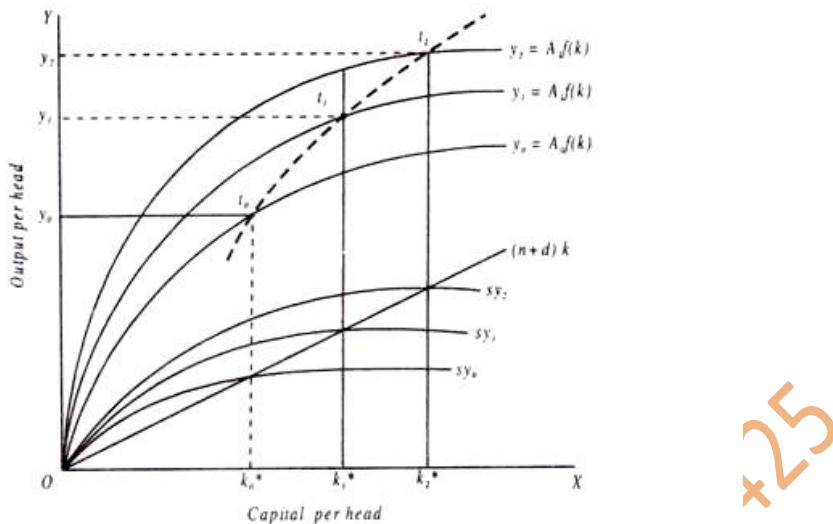
Let us now analyse the effect of technological change on long-run growth of an economy. It is important to note that neoclassical growth theory considers technological change as an exogenous variable. By exogenous technological change we mean it is determined outside the model, that is, it is independent of the values of other factors, capital and labour. That is why neoclassical production function is written as

$$Y = AF(K, L)$$

Where  $A$  represents exogenous technological change and appears outside the bracket.

In the foregoing analysis of neoclassical growth theory for the sake of simplification we have assumed that the technological change is absent, that is,  $\Delta A/A = 0$ . However, by assuming zero technological change we ignored the important factor that determines long-term growth of the economy.

We now consider the effect of exogenous technological improvement over time, that is, when  $\Delta A/A > 0$  over time.



**Fig. 45.6. Growth in Capital Per Head and Output Per Head with Exogenous Technological Change**

The production function (in per capita terms), namely,  $y = Af(k)$  considered so far can be taken as a snapshot in a year in which  $A$  is treated to be equal to 1. Viewed in this way, if technology improves at the rate of 1 per cent per year a snapshot taken in a year later will be  $y = 1.01 f(k)$ , 2 years later,  $y = (1.01)^2 f(k)$  and so forth. As a result of this technological change production function will shift upward.

In general, if technological improvement  $\Delta A/A$  per year is taken to be equal to  $g$  per cent per year, then production function shifts upward at  $g$  per cent per year as shown in Figure 45.6 where to begin with production function curve in period  $t_0$  is  $y_0 = A_0 f(k)$  corresponding to which saving curve is  $sy_0$ .

With this, in steady state equilibrium, capital per head is equal to  $k^{*0}$  and output (income) per head is  $y_1$ . With  $g$  per cent rate of technological progress in period  $t_1$  production function shifts to  $y_1 = A_1 f(k)$  and correspondingly saving curve shifts upward to  $sy_1$ . As a result in period  $t_1$  in new steady state equilibrium capital per head rises to  $k^{*1}$  and per capita output to  $y_1$ .

With a further  $g$  per cent rate of technological progress in period  $t_2$ , production function curve shifts to a higher level,  $y_2 = A_2 f(k)$  and associated saving curve shifts to  $sy_2$ . As a result, capital per head rises to  $k^{*2}$  and per capita output to  $y_2$  in period  $t_2$ . We thus see that progress in technology over time causes growth of per capita output (income). With this aggregate output will also increase over time as a result of technological progress.

The neoclassical growth theory has been successfully used to explain increase in per capita output and standard of living in the long term as a result technological progress and capital accumulation.

#### Conclusion: Key Results of Solow Neoclassical Model:

##### Let us sum up the various key results of Solow's neoclassical growth model:

1. Neoclassical growth theory explains that output is a function of growth in factor inputs, especially capital and labour, and technological progress.
2. Contribution of increase in labour to the growth in output is the most important.

3. Growth rate of output in steady-state equilibrium is equal to the growth rate of population or labour force and is exogenous of the saving rate, that is, it does not depend upon the rate of saving.
4. Although saving rate does not determine the steady-state growth rate in output, it does cause an increase in steady-state level of per capita income (and therefore also total income) through raising capital per head.
5. Steady state rate of growth of per capita income, that is, long-run growth rate is determined by progress in technology.
6. If there is no technical progress, then output per capita will ultimately converge to steady state level.

7. A significant conclusion of neoclassical growth theory is that if the two countries have the same rate of saving and same rate of population growth rate and has access to the same technology (i.e. production function), their levels of per capita income will eventually converge that is they will ultimately become equal.

In this context it is worthwhile to quote Dornbusch, Fischer and Startz. "The poor countries are poor because they have a less capital but if they save at the same rate as rich countries, and have access to the same technology, they will eventually catch up.

#### **Sources of Economic Growth:**

An important issue in growth economics is what contributions of different factors, namely, capital, labour and technology make to economic growth. In other words, what is relative importance of these different factors as sources of economic growth? Robert Solow and Denison have attempted to study the relative importance of the various sources of economic growth by using the concept of production function.

The rate of economic growth in an economy and differences in income levels of different countries and also their growth performance during a period can be explained in terms of the increase in these sources of economic growth.

It will be recalled that the production function describes the amount of total output produced depends on the amount of different factors used and the state of technology.

The following production function has been used to measure the various sources of economic growth:

$$Y = AF(K, L) \dots (1)$$

Where  $Y$  = total national product

$K$  = the quantity of physical capital used

$L$  = the quantity of labour used

$A$  = the state of technology

The production function equation (1) shows that increase in capital and labour and improvement in technology will lead to growth in national output.

Note that improvement in technology causes output increases with the given factor supplies. In other words, advancement in technology leads to the increase in productivity of factors used. Therefore, improvement in technology is generally measured by growth in total factor productivity (TFP).

It will also be noticed from the production function equation (1) that technology ( $A$ ) has been taken to be a multiplicative factor. This implies that progress in technology increases the marginal productivity of both capital and labour uniformly.

Such technological change is generally referred to as neutral technological change. Besides, we measure the sources of economic growth with the above production function by assuming constant returns to scale. Constant returns to scale implies that increase in inputs, that is, labour and capital, by a given percentage will lead to the same percentage increase in output. Further, the increase in improvement in technology ( $A$ ) or what is also referred to as increase in total factor productivity causes a shift in the production function.

With the above assumptions it can be proved that the following factors represent the sources of economic growth.

or

$$\frac{\Delta Y}{Y} = \left( \Theta \times \frac{\Delta K}{K} \right) + \left( 1 - \Theta \right) \times \frac{\Delta L}{L} + \frac{\Delta A}{A} \quad \dots (2)$$

or Growth of Output =  $\left( \begin{array}{c} \text{Share} \\ \text{of} \\ \text{Capital} \end{array} \times \begin{array}{c} \text{Growth} \\ \text{in} \\ \text{Capital} \end{array} \right) + \left( \begin{array}{c} \text{Share} \\ \text{of} \\ \text{Labour} \end{array} \times \begin{array}{c} \text{Growth} \\ \text{in} \\ \text{Labour} \end{array} \right) + \text{Technical Progress}$

Where  $\Theta$  denotes share of capital in national product,  $1 - \Theta$  denotes share of labour in national product.

The above equation, which is generally referred to as growth accounting equation shows the various sources of growth which are summarised below:

1. The contribution of increase in capital to the growth in output ( $G$  or  $\Delta Y/Y$ ) is given by increase in  $(\Delta K/K)$  capital multiplied by the share ( $\Theta$ ) of capital in national product;
2. The increase in labour force contributes to rate of economic growth equal to the labour share  $(1-\Theta)$  in national product multiplied by the growth in labour force  $(\Delta L/L)$
3. The technological improvement  $\Delta A/A$  which is measured by the increase in total factor productivity also makes an important contribution to economic growth. As mentioned above, technological progress leads to the increase in total factor productivity (TFP) which implies that with the given resources (i.e. capital and labour) more output can be produced.

#### Proof:

We can formally prove the growth accounting equation mentioned above. In the production function equation (1) the change in output ( $\Delta Y$ ) depends on changes in various inputs or factors — capital and labour  $\Delta K$  and  $\Delta L$  and change in technology.

This can be written as under:

$$\Delta Y = F(K, L)\Delta A + MP_K \times \Delta K + MP_L \times \Delta L \dots (3)$$

Where  $MP_K$  and  $MP_L$  represent marginal products of labour and capital respectively. Dividing both sides of equation (3) by  $Y$  we have

$$\frac{\Delta Y}{Y} = \frac{F(K, L)\Delta A}{Y} + \frac{MP_K \cdot \Delta K}{Y} + \frac{MP_L \cdot \Delta L}{Y}$$

Since  $Y = AF(K, L)$  we have

$$\frac{\Delta Y}{Y} = \frac{F(K, L)\Delta A}{AF(K, L)} + \frac{MP_K \cdot \Delta K}{Y} + \frac{MP_L \cdot \Delta L}{Y}$$

or 
$$\frac{\Delta Y}{Y} = \frac{\Delta A}{A} + \frac{MP_K \cdot \Delta K}{Y} + \frac{MP_L \cdot \Delta L}{Y} \dots (4)$$

Now multiplying and dividing the second term of the left-hand side of equation (4) by  $K$  and also multiplying and dividing the third term of left-hand side of the equation by  $L$  we have

$$\frac{\Delta Y}{Y} = \frac{\Delta A}{A} + \frac{K \cdot MP_K}{Y} \cdot \frac{\Delta K}{K} + \frac{L \cdot MP_L}{Y} \cdot \frac{\Delta L}{L} \dots (5)$$

Now, if rewards of factors of production are determined by marginal products of factors as actually is the case under perfect competition in neoclassical theory, then  $K \cdot MP_K / Y$  represents the share of capital in national product which we denote by  $\Theta$  and  $L \cdot MP_L / Y$  represents the share of labour in national product ( $Y$ ) which we denote by  $1 - \Theta$ , then substituting these in equation (5) we have:

$$\frac{\Delta Y}{Y} = \frac{\Delta A}{A} + \theta \frac{\Delta K}{K} + (1-\theta) \frac{\Delta L}{L}$$

The above is the same as growth accounting equation (2) which indicates the sources of growth of output.

	Output	Capital	Labour	Total Factor Productivity
<b>United States</b>				
1960-73	4.0	4.0	1.7	1.6
1973-90	2.5	3.4	2.1	0.0
<b>Japan</b>				
1960-73	10.0	10.6	1.3	5.9
1973-90	4.0	5.80	1.0	1.8
<b>Europe</b>				
1960-73	4.9	5.7	(-10.1)	3.2
1973-90	2.3	3.1	0.1	1.3

In Table 45.1 we present the contributions made by capital, labour and total factor productivity (i.e., technical improvement) in growth of output in the United States, Japan and the major countries of Europe in the two periods 1960-73 and 1973-90.

It will be seen from the table that growth of capital and improvement in total factor productivity (i.e. technological progress) have been the important sources of economic growth, especially in case of economic growth in Japan and European countries.

Table 45.1 further reveals that it is decline in total factor productivity (i.e. technological improvement) and in growth of capital that is responsible for slowdown of economic growth in the USA, Japan and European countries during the period 1973-90.

#### Knowledge or Education: the Missing Factor:

In the above growth accounting equation one factor, namely knowledge or education is missing which has been stressed among others by Nobel Laureate Prof. Amartya Sen as an important factor contributing to economic growth. It may be noted that increase in knowledge or education increases the productivity of workers by improving their productive skills and abilities.

Besides, increased knowledge raises the productivity of capital and raises the return to investment in capital goods. Since investment in promotion of knowledge or education makes workers and machine more productive, the workforce equipped with knowledge and education is often called human capital which is regarded by modern economists as an important source of economic growth.

Thus human capital or knowledge and education is the important missing factor in the growth equation of neoclassical economists, Solow and Denison. On including human capital as a separate factor which contributes to growth of output, the production function can be written as under.

$$Y = A F (K, L, H)$$

Where H represents human capital which was omitted by Robert Solow in his growth accounting equation.

#### Economies of Scale and Economic Growth:

Robert Solow in his study of sources of growth in real income did not consider economies of scale as a factor contributing to growth. Solow assumed constant returns to scale which implies if each factor in the production function increases by one percent, output also increases by one per cent.

However, some economists such as Denison and those associated with World Bank emphasise economies of scale or what is also called increasing returns to scale as a separate factor determining the rate of economic

growth. In case of the United States Denison estimated that of 2.92 per cent annual growth in national income recorded during the period 1929-1982, 0.26 per cent was due to economies of scale. However, whether there are increasing returns to scale or constant returns to scale is an empirical matter for investigation.

### **SOLOW's MODEL:**

#### **Introduction:**

Prof. Robert M. Solow made his model an alternative to Harrod-Domar model of growth.

It ensures steady growth in the long run period without any pitfalls. Prof. Solow assumed that Harrod-Domar's model was based on some unrealistic assumptions like fixed factor proportions, constant capital output ratio etc.

Solow has dropped these assumptions while formulating its model of long-run growth. Prof. Solow shows that by the introduction of the factors influencing economic growth, Harrod-Domar's Model can be rationalised and instability can be reduced to some extent.

He has shown that if technical coefficients of production are assumed to be variable, the capital labour ratio may adjust itself to equilibrium ratio in course of time.

In Harrod-Domar's model of steady growth, the economic system attains a knife-edge balance of equilibrium in growth in the long-run period.

This balance is established as a result of pulls and counter pulls exerted by natural growth rate ( $G_n$ ) (which depends on the increase in labour force in the absence of technical changes) and warranted growth rate ( $G_w$ ) (which depends on the saving and investment habits of household and firms).

However, the key parameter of Solow's model is the substitutability between capital and labour. Prof. Solow demonstrates in his model that, "this fundamental opposition of warranted and natural rates turns out in the end to flow from the crucial assumption that production takes place under conditions of fixed proportions."

The knife edge balance established under Harroddian steady growth path can be destroyed by a slight change in key parameters.

Prof. Solow retains the assumptions of constant rate of reproduction and constant saving ratio etc. and shows that substitutability between capital and labour can bring equality between warranted growth rate ( $G_w$ ) and natural growth rate ( $G_n$ ) and economy moves on the equilibrium path of growth.

In other words, according to Prof. Solow, the delicate balance between  $G_w$  and  $G_n$  depends upon the crucial assumption of fixed proportions in production. The knife edge equilibrium between  $G_w$  and  $G_n$  will disappear if this assumption is removed. Solow has provided solution to twin problems of disequilibrium between  $G_w$  and  $G_n$  and the instability of capitalist system.

In short, Prof. Solow has tried to build a model of economic growth by removing the basic assumptions of fixed proportions of the Harrod-Domar model. By removing this assumption, according to Prof. Solow, Harroddian path of steady growth can be freed from instability. In this way, this model admits the possibility of factor substitution.

#### **Assumptions:**

Solow's model of long run growth is based on the following assumptions:

1. The production takes place according to the linear homogeneous production function of first degree of the form

$$Y = F(K, L)$$

Y = Output

K = Capital Stock

L = Supply of labour force

The above function is neo-classic in nature. There is constant returns to scale based on capital and labour substitutability and diminishing marginal productivities. The constant returns to scale means if all inputs are changed proportionately, the output will also change proportionately. The production function can be given as  $aY = F(aK, al)$

2. The relationship between the behaviour of savings and investment in relation to changes in output. It implies that saving is the constant fraction of the level of output. In this way, Solow adopts the Harroddian assumption that investment is in direct and rigid proportion to income.

In symbolic terms, it can be expressed as follows:

$$I = dk/dt = sY$$

Where

S—Propensity to save.

K—Capital Stock, so that investment I is equal

3. The growth rate of labour force is exogenously determined. It grows at an exponential rate given by

$$L = L_0 e^{nt}$$

Where L—"Total available supply of labour.

n—Constant relative rate at which labour force grows.

4. There is full employment in the economy.

5. The two factors of production are capital and labour and they are paid according to their physical productivities.

6. Labour and capital are substitutable for each other.

7. Investment is not of depreciation and replacement charges.

8. Technical progress does not influence the productivity and efficiency of labour.

9. There is flexible system of price-wage interest.

10. Available capital stock is fully utilized.

Following these above assumptions, Prof. Solow tries to show that with variable technical co-efficient, capital labour ratio will tend to adjust itself through time towards the direction of equilibrium ratio. If the initial ratio of capital labour ratio is more, capital and output will grow more slowly than labour force and vice-versa.

To achieve sustained growth, it is necessary that the investment should increase at such a rate that capital and labour grow proportionately i.e. capital labour ratio is maintained.

**Solow's model of long-run growth can be explained in two ways:**

A. Non-Mathematical Explanation.

B. Mathematical Explanation.

**A. Non-Mathematical Explanation:**

According to Prof. Solow, for attaining long run growth, let us assume that capital and labour both increase but capital increases at a faster rate than labour so that the capital labour ratio is high. As the capital labour ratio increases, the output per worker declines and as a result national income falls.

The savings of the community decline and in turn investment and capital also decrease. The process of decline continues till the growth of capital becomes equal to the growth rate of labour. Consequently, capital labour ratio and capital output ratio remain constant and this ratio is popularly known as "Equilibrium Ratio".

Prof. Solow has assumed technical coefficients of production to be variable, so that the capital labour ratio may adjust itself to equilibrium ratio. If the capital labour ratio is larger than equilibrium ratio, than that of the growth of capital and output capital would be lesser than labour force. At some time, the two ratios would be equal to each other.

In other words, this is the steady growth, according to Prof. Solow as there is the steady growth there is a tendency to the equilibrium path. It must be noted here that the capital-labour ratio may be either higher or lower.

Like other economies, Prof. Solow also considers that the most important feature of an underdeveloped economy is dual economy. This economy consists of two sectors-capital sector or industrial sector and labour sector or agricultural sector. In industrial sector, the rate of accumulation of capital is more than rate of absorption of labour.

With the help of variable technical coefficients many employment opportunities can be created. In agricultural sector, real wages and productivity per worker is low. To achieve sustained growth, the capital labour ratio must be high and underdeveloped economies must follow Prof. Solow to attain the steady growth.

This model also exhibits the possibility of multiple equilibrium positions. The position of unstable equilibrium will arise when the rate of growth is not equal to the capital labour ratio. There are other two stable equilibrium points with high capital labour ratio and the other with low capital labour ratio.

If the growth process starts with high capital labour ratio, then the development variables will move in forward direction with faster speed and the entire system will grow with high rate of growth. On the other hand, if the growth process starts with low capital labour ratio then the development variables will move in forward direction with lesser speed.

To conclude the discussion, it is said that high capital labour ratio or capital intension is very beneficial for the development and growth of capitalist sector and on the contrary, low capital-labour ratio or labour-intensive technique is beneficial for the growth of labour sector.

### B. Mathematical Explanation:

This model assumes the production of a single composite commodity in the economy. Its rate of production is  $Y(t)$  which represents the real income of the community. A part of the output is consumed and the rest is saved and invested somewhere.

The proportion of output saved is denoted by  $s$ . Therefore, the rate of saving would be  $sY(t)$ . The capital stock of the community is denoted by  $K$  it). The rate of increase in capital stock is given by  $dk/dt$  and it gives net investment.

Since investment is equal to saving so we have following identity:

$$K = sY \dots (1)$$

Since output is produced by capital and labour, so the production function is given by

$$Y = F(K, L) \dots (2)$$

Putting the value of  $Y$  from (2) in (1) we get

$$S = s F(K, L) \dots (3)$$

Where

$L$  is total employment

F is functional relationship

Equation (3) represents the supply side of the system. Now we are to include demand side too. As a result of exogenous population growth, the labour force is assumed to grow at a constant rate relative to n. Thus,

$$L(t) = L_0 e^{nt} \dots (4)$$

#### Where

L—Available supply of labour

Putting the value of L in equation (3) we get

$$K = sF(K, L_0 e^{nt}) \dots (5)$$

The right hand of the equation (4) shows the rate of growth of labour force from period 0 to t or it can be regarded as supply curve for labour.

"It says that the exponentially growing labour force is offered for employment completely in elastically. The labour supply curve is a vertical line, which shifts to the right in time as the labour force grows. Then the real wage rate adjusts so that all available labour is employed and the marginal productivity equation determines the wage rate which will actually rule."

If the time path of capital stock and of labour force is known, the corresponding time path of real output can be computed from the production function. Thus, the time path of real wage rate is calculated by marginal productivity equation.

The process of growth has been explained by Prof. Solow as, "At any moment of time the available labour supply is given by (4) and available stock of capital is also a datum. Since the real return to factors will adjust to bring about full employment of labour and capital we can use the production function (2) to find the current rate of output. Then the propensity to save tells us how much net output will be saved and invested. Hence, we know the net accumulation of capital during the current period. Added to the already accumulated stock this gives us the capital available for the next period and the whole process can be repeated."

#### Possible Growth Patterns:

To find out whether there is always a capital accumulation path consistent with any rate of growth of labour force, we should know the accurate shape of production function otherwise we cannot find the exact solution.

For this, Solow has introduced a new variable:

$$r = \frac{K}{L}$$

Where K/L Capital Labour Ratio

$$K = rL$$

$$\text{But } L = L_0 e^{nt}$$

$$K = rL_0 e^{nt}$$

Differentiating with respect to t we get

$$\frac{dk}{dt} = nrL_0 e^{nt} + L_0 e^{nt} \frac{dr}{dt}$$

$$\frac{dk}{dt} = \left( nr + \frac{dr}{dt} \right) L_0 e^{nt}$$

Substituting this value in equation (5) we get

...(5)

$$\left( nr + \frac{dr}{dt} \right) L_0 e^{nt} = sF(K, L_0 e^{nt})$$

$$\text{or } \left( nr + \frac{dr}{dt} \right) L_0 e^{nt} = sFL_0 e^{nt} \frac{K}{L_0 e^{nt}}, 1$$

or  $nr + \frac{dr}{dt} = sF\left(\frac{K}{L_0 e^{nt}}, 1\right)$

Since  $\frac{K}{L_0 e^{nt}} = r$

$$nr + \frac{dr}{dt} = sF(r, 1)$$

$$\frac{dr}{dt} = sF(r, 1) - nr$$

or  $r = sF(r, 1) - nr$   
Where  $r = K/L$

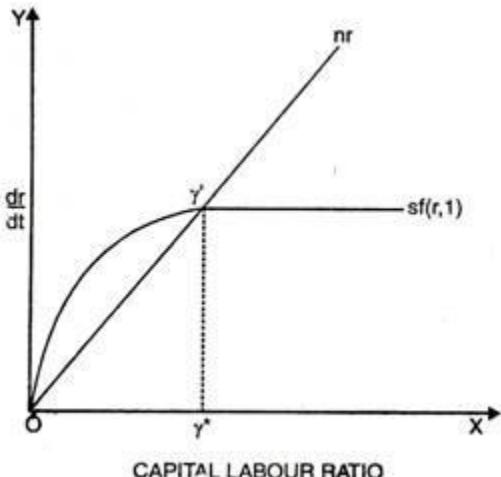
...(6)

$n$  = relative share of change of labour force ( $i/1$ )

The function  $F(r, 1)$  gives output per worker or it is the total product curve as varying amounts 'r' of capital are employed with one unit of labour. The equation (6) states that, "the rate of change of the capital labour ratio as the difference of two terms, one representing the increment of capital and one the increment of labour."

The diagrammatic representation of the above growth pattern is as under:

In diagram 1, the line passing through origin is  $nr$ . The total productivity curve is the function of  $sF(r, 1)$  and this curve is convex to upward. The implication is that to make the output positive it must be necessary that input must also be positive i.e. diminishing marginal productivity of capital. At the point of intersection i.e.  $nr = sf(r, 1)$  and  $r' = 0$  when  $r' = 0$  then capital labour ratio corresponds to point  $r^*$  is established.



Now capital and labour will grow proportionately. Since Prof. Solow considers constant returns to scale, real output will grow at the same rate of  $n$  and output per head of labour, force will remain constant.

In mathematical terms, it can be explained as:

$$\frac{dr/dt}{t} = \frac{dK/dt}{K} - \frac{dL/dt}{L}$$

Now  $\frac{dL/dt}{L} = n$

$$\frac{dk}{dt} = sF(K, L)$$

$$\frac{dr}{dt} = r \frac{sF(K, L)}{K} - nr$$

Since it was assumed to have constant returns to scale.

$$\begin{aligned}\frac{dr}{dt} &= r sF\left(1 \frac{L}{K}\right) - nr \\ &= \frac{rsF(K_L, 1)}{K_L} - nr \\ &= \frac{rsF(r, i)}{K_L} - nr\end{aligned}$$

Thus  $\frac{dr}{dt} = sF(r, 1) - nr$

Which is the same as = n (2)

#### Path of Divergence:

Here we are to discuss the behaviour of capital labour ratio, if there is divergence between r and  $r''$ . There are two cases:

- (i) When  $r > r^*$
- (ii) When  $r < r^*$

If  $r > r^*$  then we are towards the right of intersection point. Now  $nr > sF(r, 1)$  and from equation (6) it is easily shown that r will decrease to  $r^*$ . On the other hand if we move towards left of the intersection point where  $nr < sF(r, 1)$ ,  $r > 0$  and r will increase towards  $r^*$ . Thus, equilibrium will be established at point E and sustained growth will be achieved. Thus, the equilibrium value of  $r^*$  is stable.

According to Prof. Solow, "Whatever the initial value of the capital labour ratio, the system will develop towards a state of balanced growth at a natural rate. If the initial capital stock is below the equilibrium ratio, capital and output will grow at a faster rate than the labour force until the equilibrium ratio is approached. If the initial ratio is above the equilibrium value, capital and output will grow more slowly than the labour force. The growth of output is always intermediate between those of labour and capital."

The stability depends upon the shape of the productivity curve  $sF(r, 1)$  and it is explained with the help of a diagram given below:

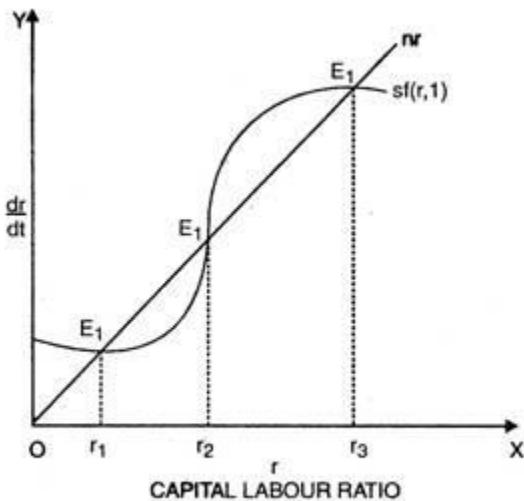


Fig. 2

In the figure 2. the productivity curve  $sf(r, 1)$  intersects the ray  $nr$  at three different points  $E_1, E_2, E_3$ . The corresponding capital labour ratio is  $r_1, r_2$  and  $r_3$ . The points are  $r_3$  stable but  $r_2$  is not stable. Taking point  $r_1$  first if we move slightly towards right  $nr > sf(r, 1)$  and  $r$  is negative implying that  $r$  decreases.

Thus, it has a tendency to slip back to  $r_1$ . If we move slightly towards its left  $nr < sf(r, 1)$  and  $r$  is positive which shows that  $r$  increases and there is a tendency to move upto point  $r_1$ . Therefore, a slight movement away from  $r_1$  creates conditions that forces a movement towards showing that  $r_1$  is a point of stable equilibrium.

Likewise, we can show that  $r_3$  is also a point of stable equilibrium. If we move slightly towards right of  $r_2$ ,  $sf(r, 1) < nr$  and  $r$  is positive and there is a tendency to move away from  $r_2$ .

On the other hand, if we move slightly towards left of  $r_2$   $nr > sf(r, 1)$  so that  $r$  is negative and it has a tendency to slip downwards towards  $r_1$ . Therefore depending upon initial capital labour ratio, the system will develop to balanced growth at capital labour ratio  $r_1$  and  $r_3$ . If the initial ratio is between  $0$  and  $r_2$ , the equilibrium is at  $r_1$  and if the ratio is higher than  $r_2$  then equilibrium is at  $r_3$ .

To conclude Solow puts, "When production takes place under neoclassical conditions of variable proportions and constant returns to scale, no simple opposition between natural and warranted rates of growth is possible. There may not be any knife edge. The system can adjust to any given rate of growth of labour force and eventually approach a state of steady proportional expansion" i.e.

$$\Delta K/K = \Delta L/L = \Delta Y/Y$$

Unlike Harroddian model, Solow's model also does not apply to development' problem of under-developed countries. Most of the under-developed countries are either in pre take-off or 'take-off condition and this model does not analyse any policy formulation to meet the problems of under-developed countries.

But certain elements from the Solow model are still valid and can be used to chalk out the problem of under-development. The remarkable feature of Solow model is that it provides deep insight into the nature and type of expansion experienced by the two sectors of under-developed countries.

The interpretation of under- development is explained with the help of a diagram 3 given as next:

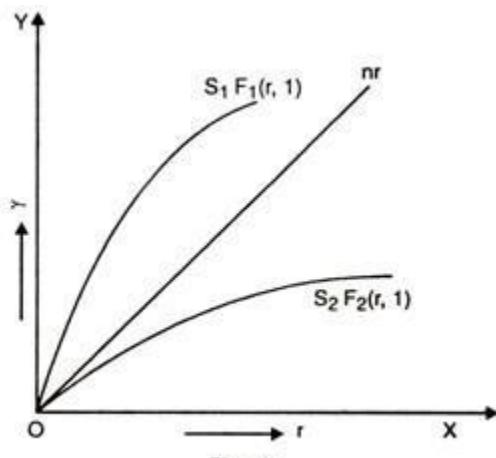


Fig. 3

The line  $nr$  represents the balanced requirement line. When the warranted growth rate and natural growth rate are equal then steady growth is achieved.

Along this path, there is full employment and unchanging capital labour ratio. The curve represented by  $s_1 f_1(r, 1)$  gives productive system in terms of both output and savings. On the other hand  $s_2 f_2(r, 1)$  gives unproductive system and the per capita income and savings would decline. Both the systems have low marginal productivity.

The first system can be identified by industrial sector of under-developed countries which tends to grow with ever increasing intakes of capital in relation to labour. The second system conforms to the agrarian sector of under-developed countries. There is more labour supply due to rapid population growth. Investment is also positive.

The bottleneck of skilled labour holds back the expansion of industrial sector of under-developed countries.

The marginal productivity of labour is bound to fall and as it falls below the minimum real wage rates, disguised unemployment would rear its head. If the real wage rate is fixed at certain level, then employment is such that it can maintain marginal product of labour at this level.

Once the initial growth of population has occurred and land has become scarce, the real wage rate tends to be fixed at certain level, though the marginal productivity declines. The result of this is disguised unemployment.

In nut-shell, we can conclude the discussion of validity of Solow's model is that there are certain elements which could be gainfully utilized for analyzing the problem of under-development. The phenomenon of technological dualism which is commonly prevalent in these economies can be better explained in terms of Solow's model.

Though, Solow's model is basically embedded in a different setting, yet its concept of technical co-efficient provides elegant and simple theoretical apparatus to solve the problems of under-development.

#### Applicability to Underdeveloped Countries:

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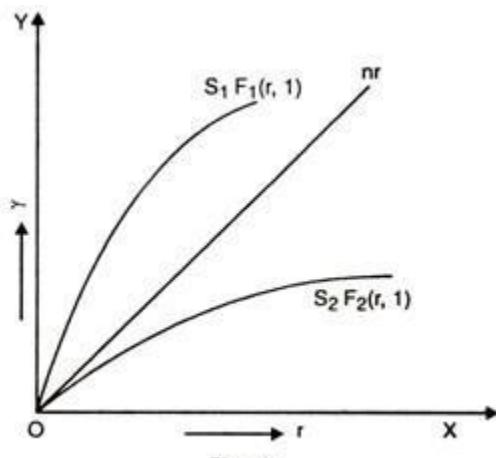


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Though, Solow's model is basically embedded in a different setting, yet its concept of technical co-efficient provides elegant and simple theoretical apparatus to solve the problems of under-development.

#### **Merits of the Model:**

Solow's growth model is a unique and splendid contribution to economic growth theory. It establishes the stability of the steady-state growth through a very simple and elementary adjustment mechanism.

Certainly, the analysis is definitely an improvement over Harrod-Domar model, as he succeeded in demonstrating the stability of the balanced equilibrium growth by implying neo-classical ideas. In fact, Solow's growth model marks a break-through in the history of economic growth.

#### **The merits of Prof. Solow's model are under-mentioned:**

- Being a pioneer of neo-classical model, Solow retains the main features of Harrod-Domar model like homogeneous capital, a proportional saving function and a given growth rate in the labour forces.

- (ii) By introducing the possibility of substitution between labour and capital, he gives the growth process and adjustability and gives more realistic touch.
- (iii) He considers a continuous production function in analysing the process of growth.
- (iv) Prof. Solow demonstrates the steady-state growth paths.
- (v) He successfully shunted aside all the difficulties and rigidities of modern Keynesian income analysis.
- (vi) The long-run rate of growth is determined by an expanding labour force and technical process.

### **Short Comings of the Model:**

#### **1. No Study of the Problem of Balance between G and Gw:**

Solow takes up only the problem of balance between warranted growth ( $G_w$ ) and natural growth ( $G_n$ ) but it does not take into account the problem of balance between warranted growth and the actual growth ( $G$  and  $G_w$ ).

#### **2. Absence of Investment Function:**

There is a absence of investment function in Solow's model and once it is introduced, problem of instability will immediately reappear in the model as in the case of Harroddian model of growth.

#### **3. Flexibility of Factor Price may bring Certain Problems:**

Prof. Solow assumed the flexibility of factor prices but it may bring certain difficulties in the path of steady growth.

For example, the rate of interest may be prevented from falling below a certain minimum level and this may in turn, prevent the capital output ratio from rising to a level necessary for sustained growth.

#### **4. Unrealistic Assumptions:**

Solow's model is based on the unrealistic assumption that capital is homogeneous and malleable. But capital goods are highly heterogeneous and may create the problem of aggregation. In short, it is not easy to arrive at the path of steady growth when there are varieties of capital goods in the market.

#### **5. No Study of Technical Progress:**

This model has left the study of technological progress. He has merely treated it as an exogenous factor in the growth process. He neglects the problem of inducing technical progress through the process of learning, investment and capital accumulation.

#### **6. Ignores the Composition of Capital Stock:**

Another defect of Prof. Solow's model is that it totally ignores the problem of composition of capital stock and assumes capital as a homogeneous factor which is unrealistic in the dynamic world of today. Prof. Kaldor has forged a link between the two by making learning a function of investment.

### **APPROACHES TO DEVELOPMENT:**

Development means "improvement in country's economic and social conditions". More specially, it refers to improvements in way of managing an area's natural and human resources. In order to create wealth and improve people's lives.

Dudley Seers while elaborating on the meaning of development suggests that while there can be value judgements on what is development and what is not, it should be a universally acceptable aim of development to make for conditions that lead to a realisation of the potentials of human personality.

**Seers outlined several conditions that can make for achievement of this aim:**

- i. The capacity to obtain physical necessities, particularly food;
- ii. A job (not necessarily paid employment) but including studying, working on a family farm or keeping house;
- iii. Equality, which should be considered an objective in its own right;
- iv. Participation in government;
- v. Belonging to a nation that is truly independent, both economically and politically; and
- vi. Adequate educational levels (especially literacy).

The people are held to be the principal actors in human scale development. Respecting the diversity of the people as well as the autonomy of the spaces in which they must act converts the present day object person to a subject person in the human scale development. Development of the variety that we have experienced has largely been a top-down approach where there is little possibility of popular participation and decision making.

**Human scale development** calls for a direct and participatory democracy where the state gives up its traditional paternalistic and welfarist role in favour of a facilitator in enacting and consolidating people's solutions flowing from below. "Empowerment" of people takes development much ahead of simply combating or ameliorating poverty. In this sense development seeks to restore or enhance basic human capabilities and freedoms and enables people to be the agents of their own development.

In the process of capitalistic development and leading national economy towards integration into foreign markets, even politically democratic states are apt to effectively exclude the vast masses from political and economic decision-making. The state itself evolves into a national oligarchy hedged with authoritarian and bureaucratic structures and mechanisms that inhibit social participation and popular action.

The limited access of the majority to social benefits and the limited character of participation of the masses can often not be satisfactorily offset by the unsuccessful and weak redistributive policies of the government. Powerful economic interest groups set the national agenda of development, often unrepresentative of the heterogeneous and diverse nature of our civil society making for a consolidation and concentration of power and resources in the hands of a few.

Also, a focus on people and the masses implies that there could be many different roads to development and self-reliance. The slogans "human centred development", "the development of people", "integrated development", all call for a more inclusive and sensitive approach to fundamental social, economic and political changes involved in development such that all aspects of life of a people, their collectivity, their own history and consciousness, and their relations with others make for a balanced advancement.

The adoption of a basic needs approach with the concept of endogenous development make for a development agenda that is universally applicable while at the same time allowing for country specific particularities to be given due account.

The challenge of human scale development is to nurture diversity instead of being threatened by it, to develop processes of political and economic decentralisation, to strengthen democratic, indigenous traditions and institutions and to encourage rather than repress emerging social movements which reflect the people's need for autonomy and space.

The fruits of economic development may be distributed more equitably if local spaces are protected, micro-organisations are facilitated and the diverse collective identities that make up the social body are recognised and represented. Greater control of popular masses over environment is a must. In fact this concept of development seeks for the civil society rather than the state to own up and nurture development, so that the role of social actors is enhanced.

Social and Human Development, therefore necessarily requires a unified approach, integrating the economic and social components in plans, policies and programmes for people's betterment. The challenge is to simultaneously integrate cross sectoral and regional developmental needs as well as to make for a participative development. The issues of environment, pollution, women, habitat, hunger and employment

have come to the fore one by one and continue to require public and institutional attention along with resource allocations. Two major contemporary concerns that require focus in any development initiative are that of human security and sustainability.

We need to ensure that development does not mean social dislocation, violence and war and that we meet "the needs of the present generation without compromising the ability of future generations to meet their own needs."

Each of these problems is interrelated in complex ways and requires a unified approach. The purpose of development should be to develop man and not to end with developing things. Fulfillment of basic needs of mankind should be the true objective of development and achievements that either do not contribute to this goal or even disrupt this basic requirement must not be pursued as a development goal.

### **BALANCED GROWTH:**

Balanced growth is a dynamic process and as such the meaning of balanced growth continues changing.

The concept of balanced growth is subject to various interpretations by various authors. It was Fredrick List who for the first time put forward the theory of balanced growth.

According to Fredrick List the theory of balanced growth is of great significance by which a balance could be established between agriculture, industry and trade.

This concept was endorsed by Rosenstein Rodan in one of his articles titled "Problems of Industrialisation of Eastern and South Eastern Europe." Prof. Nurkse, Prof. Lewis and Stovasky have examined this concept of balance of growth on different bases. In the words of Kindleberger, "Balanced Growth has so many meanings that it is in danger of losing them all."

$$G_y = G_w = G_n$$

Here  $G_y$  stands for growth rate of income,  $G_w$  stands for growth rate of output and  $G_n$  stands for growth rate of natural resources.

8. Mrs. Joan Robinson's concept of golden age also implies balanced growth. It states that there must be equality between growth rate of capital and labour force i.e.

$$\Delta K/K = \Delta N/N$$

### **Conclusion:**

From the above cited definitions, we stand by the views of Kindleberger who rightly observed that "balanced growth has so many meanings that it is in danger of losing them all." However, the most widely discussed and accepted meaning of balanced growth is that there should be simultaneous and harmonious development of different sectors of the economy, so as to make available a ready market for the products of different sectors. It is, thus, confirmed that balanced growth is not a static term, but it refers to its dynamism.

### **Basis of the Theory:**

The doctrine of balanced growth requires the balance of three types which is discussed below:

#### **1. Supply Side:**

Supply or production in an underdeveloped country is low. The reason behind it is that saving in these countries is low because of low income. Low savings results in low investment. Low investment leads to low capital formation and low productivity. Low productivity leads to low income, i.e.

Low Income—Low Savings—Low Investment—Low Capital Formation—Low Productivity—Low Income:

So, it is imperative to increase investment in order to increase demand. But investment will increase when the entrepreneurs will get impetus to invest. In other words, their products will sell and they will earn profit. Therefore, it becomes essential that several industries are set up simultaneously.

Thus, the concept of balanced growth from the supply side is that various sectors of an underdeveloped economy should be developed simultaneously so that no difficulty in the path of economic development is created. For example, agriculture, industry, internal trade, transport, etc. should be developed simultaneously. According to Prof. Lewis, "The various sectors of the economy must go with the right relationship to each other or they cannot go at all."

## **2. Demand Side:**

In the underdeveloped countries, people have low purchasing power because of their low income. So, their demand is also low. Low demand results in less expansion of market. Small market inspires low investment i.e.,

Low Income → Low Purchasing Power → Low Investment → Low Productivity

Therefore efforts should be made to increase the demand in these countries. The concept of balanced growth from the demand side is that several industries should be developed simultaneously so that all can be the customers mutually and the products of all can be sold. In this regard Rosenstein Rodan has given an example. According to him, if a shoe make industry is set up all people linked with it will get income. But they will not spend all of their income only on buying shoes. They will buy goods manufactured by other industries.

Similarly if only one sided development is made it will not succeed. Contrary to it, if several industries are developed simultaneously and harmoniously, this difficulty can be removed. Therefore, Prof. Nurkse says, "Most industries catering for' mass consumption are complementary in the sense that they provide a market for and thus support each other."

## **3. Sectoral Balance:**

Sectoral balance means economic development of all the sectors in an economy. As agriculture and industry are complementary to each other. Thus, expansion of industry will require expansion of agriculture and vice-versa. Again expansion of industrial sector will raise the demand for raw-material which will only be supplied by expanding of agricultural sector. Prof. Lewis maintained that if these sectors are simultaneously developed, the relative price among them can be maintained.

There may be any unfavorable terms of trade among them. In the same manner, a balance between domestic trade and foreign trade becomes essential during the process of economic development. Thus, according to Prof. Lewis, the domestic sector must grow in balance with the foreign sector.

## **Critical Minimum Theory**

According to Prof. Harvey Leibenstein the overpopulated and underdeveloped countries are characterized by the vicious circle of poverty.

They have low per capita income. His 'theory of critical minimum effort' is an attempt to provide a solution to this economic problem.

According to him, critical minimum effort is necessary to achieve a steady economic growth raising per capita income.

"In order to achieve the transition from the state of backwardness to the more developed state, where we can expect steady secular growth, it is necessary, though not always sufficient condition, that at the same point or during the same period, the economy should receive a stimulus to growth that is necessary than a certain critical minimum size"-Leibenstein.

The main idea of the theory is that economic growth in the underdeveloped and overpopulated countries in not possible unless a certain minimum level of investment is injected into the system as a consolidated dose that pulls the system out of doldrums. This minimum level of investment is called 'critical minimum effort'.

According to Leibenstein, "A sufficiently large minimum effort is necessary at the outset if the necessary minimum is to be achieved." It is necessary for the sustained economic growth of underdeveloped countries that a certain minimum sum of money is invested. Prof. Leibenstein has further added, "In order to achieve

the transition from the state of backwardness to the more developed state, where we can expect steady secular growth, it is necessary, though not always sufficient condition, that at the same point or during the same period, the economy should receive a stimulus to growth that is necessary than a certain critical minimum size."

### Shocks and Stimulants:

According to Leibenstein, every economy is under the influence of two forces—'shocks' and 'stimulants'.

Shocks refer to those forces which reduce the level of output, income, employment and investment etc. In other words, shocks dampen and depress the development forces. Shocks depress development forces which reverse the wheel of development.

On the contrary, stimulants refer to those forces which raise the level of income, output, employment and investment etc. In other words, Stimulants impress and encourage development forces. They are called 'Income Generating forces' which lubricate the wheel of development. Stimulants have the capacity to raise per capita income above equilibrium level.

The long run economic development does not take place in backward and undeveloped countries as the magnitude of stimulants in those countries is quite small. A country is said to be underdeveloped if the impact of shocks is stronger than the impact of stimulants. On the contrary, a country is said to be developed if the impact of shocks is weaker than the impact of stimulants.

Leibenstein is of the view that the underdeveloped countries are under the influence of shocks and stimulants. But in the long run, the magnitude of shocks and stimulants is too small and there is no process of development. Thus, the efforts to escape from economic backwardness, the spontaneous or forced, are below the critical minimum effort required for persistent growth.

In order to break the circle of poverty, backwardness and other imperfection in underdeveloped country, they must get critical effort sufficient in magnitude to move the economy on the path of development.

### Diagrammatic Representation:

The theory of critical minimum effort has been illustrated in Figure 1.

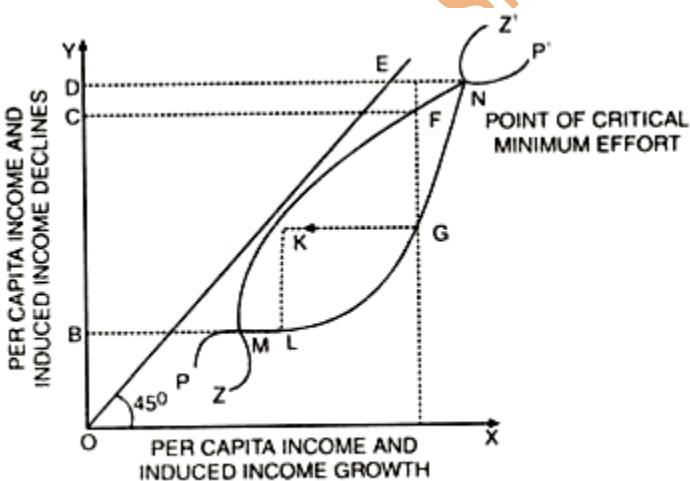


Fig. 1.

The diagram shows the outcome of the struggle between the stimulants and shocks and also enables to find out stimulants of sufficient magnitude as below:

- OX-axis of the diagram represents per capita income and induced income growth.

- (ii) OY-axis indicates per capita income and induced income declines.
- (iii) The  $45^\circ$  line measures induced increases and decreases in income.
- (iv) P' curve represents stimulants and Z' curve shows stocks.
- (v) OM is the subsistence living standard.
- (vi) At M' curve P' Z' intersect each other indicating the equality between growth rate of population and the growth rate of income so that the income is caught in the vicious circle of poverty.
- (vii) If the income level is raised from OB to OC which is not in accordance with the critical minimum effort, the rising population will neutralize the increased income. The system will once again hand on the subsistence level of living. Shocks being more powerful than the stimulants. At OJ level of income raising forces are just FE while the depressants up to GM. This will bring the income level down to M again which is just the subsistence level.
- (viii) Solution of this problem for such a rise in the level of national income where stimulants are stronger than the shocks so that the growth in income becomes self-sustaining.
- (ix) If the per capita income is raised beyond OD' the economy can be pulled out of the vicious circle of poverty. Thereby, growth in income becomes self-sustaining beyond point D. The per capita income has been shown by the arrows.

#### **Attitudes, Motivation and Incentives:**

According to Leibenstein, the generation of stimulants depends on attitudes and motivation of the people and the incentives given to them. However, the motivation and incentives are useless without the main factors of economic development. The main factors of economic development are the entrepreneurs, the inventors, the discoverers, the innovators, and those who can accumulate and utilize wealth, and those who can accumulate skills and spread knowledge.

No doubt the activities of such persons are endless, but we are to study only those activities which are in a position to generate stimulants and promote economic growth. It requires continuous efforts of various agencies necessary for economic development. It requires special type of human response to attitudes, motivations and incentives which are created by economic and social environment.

#### **Incentives:**

According to Leibenstein, there are two types of incentives that are found in the underdeveloped countries:

- (i) Zero-sum Incentives.
- (ii) Positive sum Incentives.

#### **(i) Zero-sum Incentives:**

Zero-sum incentives are those which exercise zero effect on economic growth. They do not increase national income. It includes trading risk, non-trading or speculative activities and transference of income and profit from one section of people to another. The zero-sum incentives have distributive effect only. They are carried on in order to secure greater monopolistic position, political power and local prestige. They do not add to aggregate resources of the community. In fact, it is a wastage of scarce resources. In short, we may say that zero-sum incentives are not conducive for economic growth.

#### **(ii) Positive-sum Incentives:**

The positive-sum incentives lead to economic growth and enhance the national income. The positive-sum activities are essential for economic development. These activities consist of productive investment, use of technical know-how, exploration and exploitation of the new markets and the use of scientific discoveries and innovations etc. These are conducive for economic growth as they change the attitudes, motivations and aspirations of the people.

They try to raise the level of income, output, investment, saving and employment. Leibenstein is of the opinion that mere creation of positive-sum activities is not sufficient to solve the problems of economic development. Because such activities are unfortunately directed towards zero-sum activities for want of growth oriented environment. It is, thus, essential that the minimum effort should be enough to create such a favourable environment congenial to the persistence of positive sum incentives.

In underdeveloped countries certain influences which work against the positive change or depress their per capita income, are as follows:

- (a) The zero-sum entrepreneurial activities directed towards the maintenance of present economic privileges;
- (b) The conservative attitude of both organised and unorganized workers;
- (c) The attraction of traditional ideas and resistance to the new ideas and knowledge;
- (d) Increase in non-productive consumption expenditures that could otherwise be used for capital accumulation;
- (e) Greater population growth, other things being equal, that reduce the amount of capital available per worker, and
- (f) High capital-output ratio.

**Leibenstein** stresses that these influences can be overcome by a sufficiently large critical minimum effort which would stimulate the positive-sum incentives, counteracting the zero-sum activities. It would, thus, restore a rapid rate of economic growth in underdeveloped economies. As a result, the per capita income would rise and tend to increase the level of saving and investment in the economy.

A critical minimum effort, in turn, would lead to:

- (i) An expansion of the growth agents;
- (ii) An increase in their contribution to per unit of capital, as the capital-output ratio declines;
- (iii) A fall in the effectiveness of factors restricting growth;
- (iv) The creation of an environment that stimulates socio-economic mobility; and
- (v) The expansion of secondary and tertiary sectors.

#### **Role of Growth Agents:**

The critical minimum effort theory is based on the sum of positive-sum activities and such activities are carried on by some growth agents. According to Leibenstein, "By growth agents we mean those individuals who have the capacities to carry out the growth contributing activities." Leibenstein's growth agents are not land, labour and capital, but his growth agents are the entrepreneurs, investors, discoverers, savers and innovators. Leibenstein found that entrepreneur is the most crucial agent of growth.

He is a person of rare qualities and he is out to explore new investment opportunities so as to mobilize essential resources for production and promotion of new ventures etc. He promotes, encourages and sustains positive-sum activities which are essential for the economic growth of a country. The critical minimum theory is based on the presence of certain favourable conditions which are created by the expansion of the growth agents in the process of economic development.

These conditions lead the income increasing forces at a higher rate than the income depressing forces. The growth of contributing activities includes the creation of entrepreneurship, expansion of workers' skill and the increase in the rate of savings, investment, capital formation and technical know-how etc.

#### **Population Growth and Per Capita Income:**

Leibenstein's theory recognizes population growth as a function of per capita income. It is related to the various stages of economic development. At the subsistence equilibrium level of income, fertility and mortality rates are the maximum consistent with the survival rate of population. Now if the per capita income is raised above the subsistence equilibrium position the mortality rate falls without any drop in the fertility.

The result is an increase in the growth rate of population. Thus, an increase in the per capita income tends to raise the growth rate of population. It is only up to a point. Beyond that the increase in the per capita income lowers the fertility rate and as development gains momentum, the rate of population growth declines.

The Leibenstein argued that with the increase in per capita income, the desire to have more children declines. Specialization leads to increasing income levels and the consequent-social and economic mobility make it a difficult and costly affair to support a large family.

Hence, growth rate of population becomes constant and then starts declining gradually as the economy gradually advances towards the path of sustained development. According to Leibenstein, a biologically maximum growth rate may be about 3 or 4 per cent. Leibenstein, thus suggests to make sufficiently the necessary critical minimum effort so as the control such a very high population growth.

The relationship between population growth and per capita income is illustrated in the diagram 2

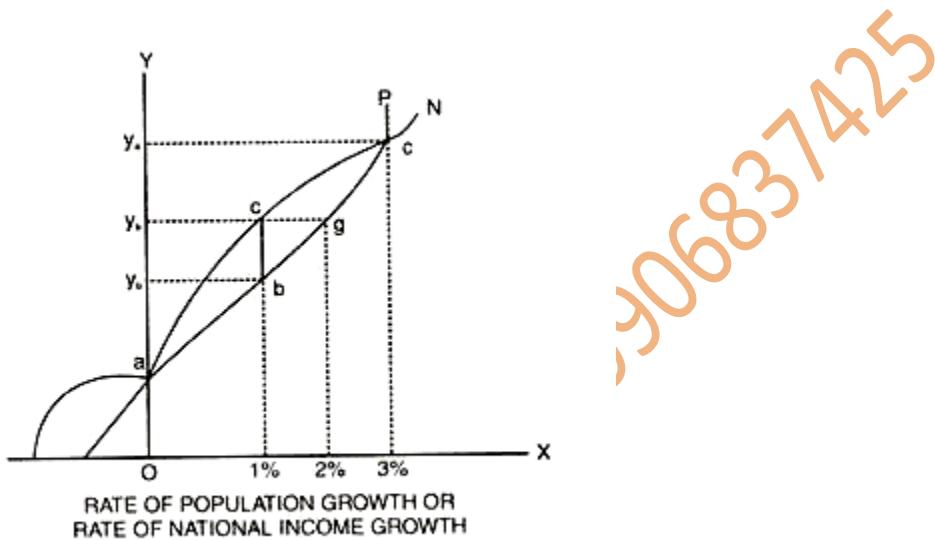


Fig. 2

#### Diagrammatic Representation:

In figure 2, rate of population growth or rate of national income growth is shown on the horizontal scale and per capita income on the vertical scale. Curve P indicates the population growth and curve N indicates the level of per capita income. Let us start from the point a which represents the subsistence equilibrium point.

Here the population growth or national income growth is zero. When the per capita income rises to  $y_b$ , the population growth rate and national income growth rate both are equal to 1%. When per capita income rises to  $y_c$ , we have the points c and g on curves N and P respectively. These points signify that at the  $y_c$  level of per capita income, the population growth rate is 2% whereas national income growth rate is 1%. Thus, this is a disequilibrium state and cannot represent a level of income that can sustain itself.

Therefore, the level of per capita income should be raised to that level at which population growth rate starts declining and national income growth rate starts rising. The only such point is  $y_e$ . At this level of per capita income the population growth rate is 3%. The growth rate of population, according to Leibenstein is maximum biologically determined.

After  $y_e$  level of per capita income, the population starts declining and national income starts rising. Thus  $y_e$  level of per capita income is critical minimum per capita income which can sustain itself or which can

generate the process of self-sustained growth. According to Leibenstein, the less developed countries must raise their per capita income to this level, if they want to achieve the sustained growth.

### **Big Push Theory**

The theory of big push is a modern version of an old idea of external economies'. It is better that the idea of external economies can be illustrated with the help of an example.

Suppose, there are two industries A and B. If industry A expands in order to overcome the technical divisibility's, it shall derive certain internal economies.

It results in lowering the price for the product of industry A. If A's output is used as input for industry B, the profit of A's internal economies shall be passed on to B in the form of pecuniary external economies. Thus, "the profits of industry B created by the lower prices of factor A, will call for investment and expansion in industry B, one result of which will be an increase in industry B's demand for industry A's product. This, in turn, will give rise to profits and call for further investment and expansion of industry A". Therefore, external economies and indivisibilities flowing are significant determinants of economic development in an economy.

The theory is based on the assumption that an industrial economy enjoys large many external economies. To enjoy these economies, a massive investment is necessary in the development of several industries at the same time.

#### **Main Features of the Theory of Big Push:**

The principal features of the theory of Big Push are given below:

##### **1. Massive Investment:**

The theory of big push envisages massive investment at the very outset of the process of growth. In its absence, the process of growth may not be self-sustaining.

##### **2. Investment in Different Sectors:**

The theory envisages the need for investment across different channels of growth so that each channel sustains the growth of other by providing the necessary demand-base. Thus, it leads towards the Balanced Growth of the system.

##### **3. Planned Industrialisation:**

The theory stresses the need for planned industrialisation of under developed countries where agriculture is the dominant sector which is backward and riddled with poverty. A big-push to industrialisation is expected to place the system on sound footing, staving-off the uncertainties of agricultural production.

#### **Lewis Model of Unlimited Supply of Labor:**

The Nobel Laureate, W. Arthur Lewis in the mid 1950s presented his model of unlimited supply of labor or of surplus labor economy. By surplus labor it means that part of manpower which even if is withdrawn from the process of production there will be no fall in the amount of output.

#### **Assumptions of the Lewis Model:**

Lewis model makes the following assumptions:

- (i) There is a dual economy i.e., the economy is characterized by a traditional, over-populated rural subsistence sector furnished with zero MPL, and the high productivity modern urban industrial sector.
- (ii) The subsistence sector does not make the use of 'Reproducible Capital', while the modern sector uses the produced means of capital.
- (iii) The production in the advanced sector is higher than the production in traditional and backward sector.

(iv) According to Lewis, the supply of labor is perfectly elastic. In other words, the supply of labor is greater than demand for labor.

The followings are the sources of unlimited supply of labor in UDCs.

(i) Because of severe increase in population more, than required number of labors are working with lands, the so called disguised unemployed.

(ii) In UDCs so many people are having temporary and part time jobs, as the shoe-shines, loaders, porters and waiters etc. There will be no fall in the production even their number are one halved.

(iii) The landlords and feudals are having an army of tenants for the sake of their influence, power and prestige. They do not make any contribution towards production, and they are prepared to work even at less than subsistence wages.

(iv) The women in UDCs do not work, but they just perform house-hold duties. Thus they also represent unemployment.

(v) The high birth rate in UDCs leads to grow unemployment.

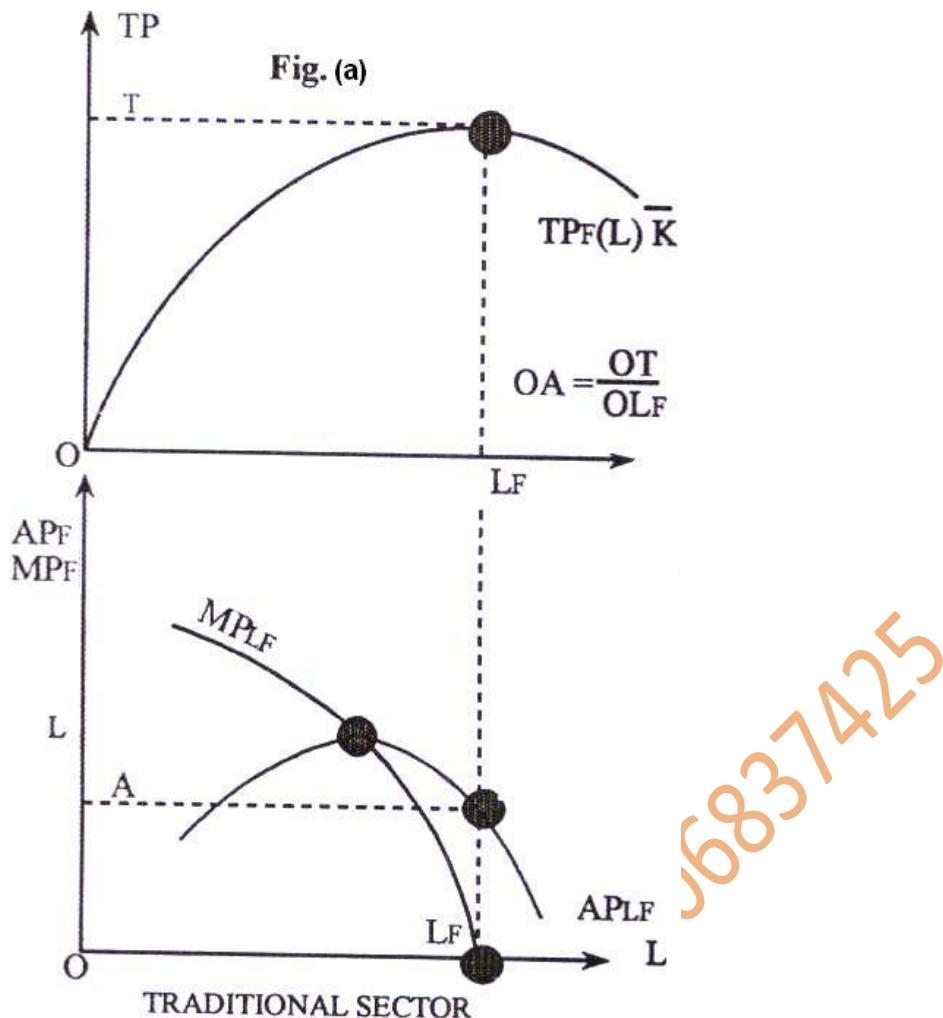
#### **Basic Thesis of the Lewis Model:**

Lewis model is a classical type model which states that the unlimited supplies of labor can be had at the prevailing subsistence wages. The industrial and advanced modern sector can be developed on the basis of agri. to traditional sector. This can be done by transferring the labor from traditional sector and modern sector.

Lewis says that the wages in industrial sector remain constant. Consequently, the capitalists will earn 'surplus'. Such surplus will be re-invested in the modern sector leading to absorb the labor which are migrated from subsistence sector. In this way, the surplus labor or the labor which were prey to disguised unemployment will get the employment. Thus both the labor transfer and modern sector employment growth are brought about by output expansion in that sector. The speed with which this expansion occurs is determined by the rate of industrial investment and capital accumulation in the modern sector. Though the wages have been assumed constant, yet Lewis says that the urban wages are at least 30% higher than average rural income to induce the workers to migrate from their home areas.

#### **Figure/Diagram:**

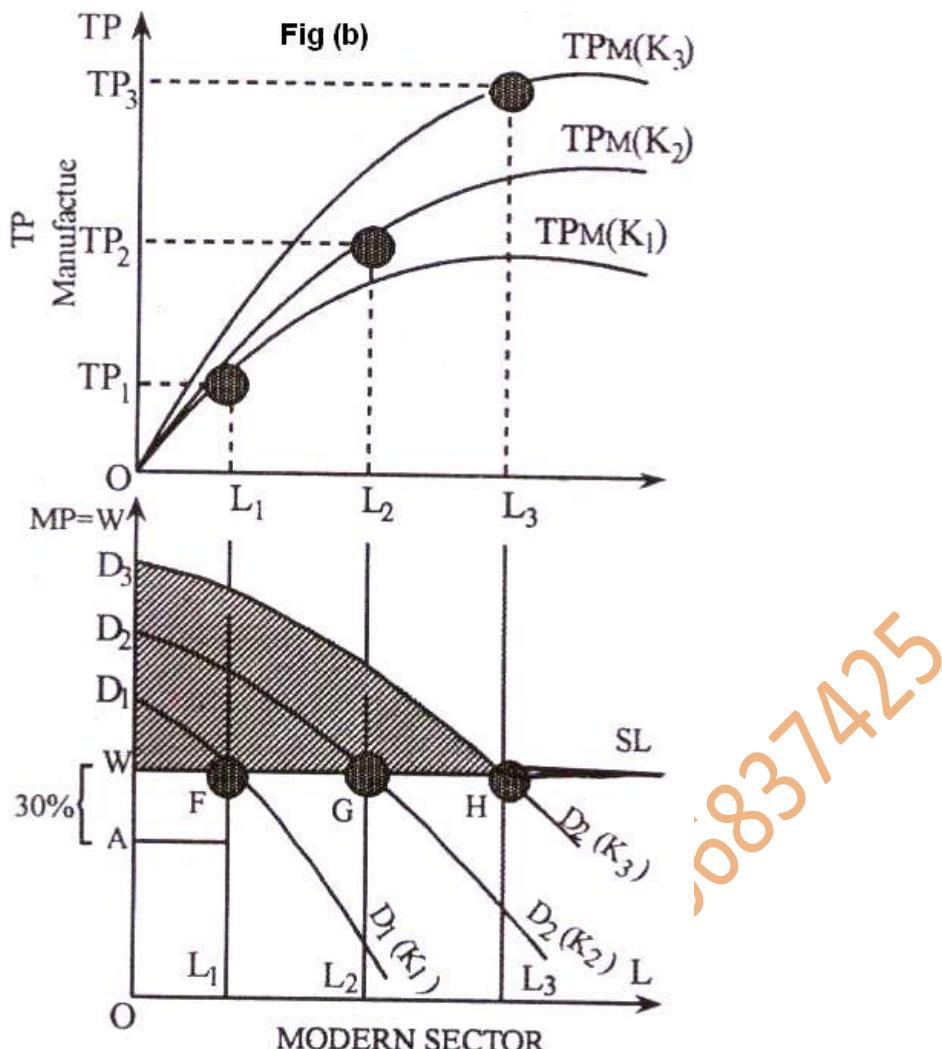
The process of migration and capital formation is shown with the help of fig (a).



In the fig., the production function regarding traditional sector has been demonstrated. Here in the upper part of the fig., by employing  $LF$  of labor, the  $OT$  of food production has been produced, while the amount of capital is fixed here. In the lower part of figure we have  $APL$  and  $MPL$  in the subsistence farming sector which have been derived from the  $TPF$  curve in the upper part of the fig. This is the behavior of a UDC where 80% to 90% of population lives and works in rural areas.

**Lewis makes two assumptions regarding traditional sector:**

- (i) There is surplus labor because  $MPL = 0$  (as  $MPL_F$  curve cuts x-axis).
- (ii) All rural workers share equally in the output so that rural real wage is determined by the  $APL$ , and not by  $MPL$ . Thus it is  $OA$ , which has been attained by dividing  $OT$  by  $OLF$  labor in subsistence sector.



In the fig (b) the upper segment we have the production functions regarding modern industrial sector. In case  $OL$ , labor are employed, having the production function  $TPM(K_1)$ ,  $TP_1$  is being produced. In the lower segment of fig., the demand for labor is  $D_1(K_1)$  at the constant wages ( $OW$ ) which are 30% higher than the average rural wages.

In the Lewis model, the modern sector capital stock is allowed to increase from  $K_1$  to  $K_2$  and  $K_3$  as a result of reinvestment of profits by capitalist industrialists. This causes the TP curve in the upper part of fig., to shift upward from  $TPM(K_1)$  to  $TPM(K_2)$  and to  $TPM(K_3)$ . The process that will generate these capitalistic profits for reinvestment and growth is illustrated in the lower part of fig. (b). The modern sector MPL curves have been derived from the TPM curves of the upper part of the fig. (b). These curves are demand for labor curve because of assumption of perfect competition.

The  $OA$  in both lower parts of fig (a) and (b) represents the average level of real subsistence income in the traditional rural sector. But in the modern sector the real wages have been represented by  $OW$  (the 30% higher than rural wages).

At such wages the supply of rural labor is assumed to be unlimited or perfectly elastic as shown by  $WSL$  curve in fig (b). This means that modern sector employer can hire as much labor as he likes without any fear of rise in wages. It is also told that in traditional sector the supply of labor is in the millions, while the employment in modern sector is in thousands. In the modern sector the employment is made by the employer to the point where  $MPL = W$ . (the point  $F$  in the lower part of fig. (b)). Thus the basic employment is  $OL_1$ , with this employment of labor  $CD_1FL$ , output in manufacturing sector is being produced. While the share of such employed labor will be  $OWFL_1$ .

The balance of output shown by the shaded area  $WD_1F$  would be the total profits (surplus) that accrue to the capitalists. As Lewis assumes that all of these profits are reinvested, the total stock of capital in the modern sector will rise from  $K_1$  to  $K_2$ . As a result,  $TPM$  will shift from  $TPM(K_1)$  to  $TPM(K_2)$  which in turn leads to increase  $MPL$ . In other words, the demand for labor will increase as shown by the curve  $D_2(K_2)$  in the lower part of fig (b).

Now the new equilibrium in the modern sector takes place at point G where  $OL_2$  labor are being employed. The total output rises to  $OTP_2$  or  $OD_2GL_2$  while total wages and profits increase to  $OWGL_2$  and  $WD_2G$ , respectively. Once again, these larger ( $WD_2G$ ) profits are reinvested, the total stock of capital will increase to  $K_3$ . Again the  $TP$  curve will shift upward, as the  $TPM(K_3)$ , and demand for labor curve will shift to  $D_3(K_3)$ .

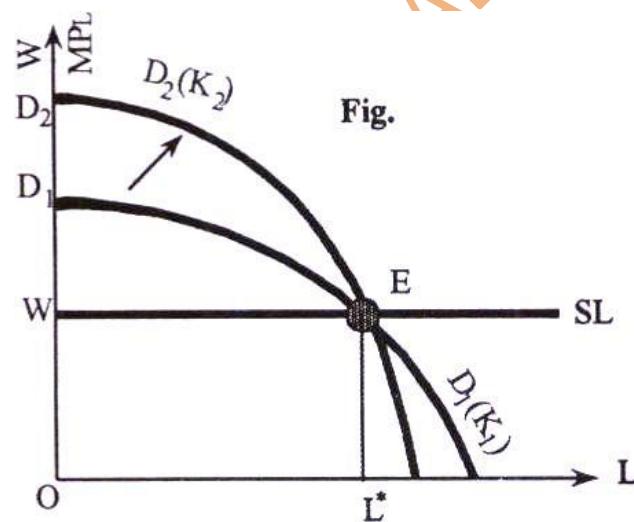
This process of modern self sustaining growth and employment expansion will remain continue till all the surplus rural labor is absorbed in the new industrial sector. There after, additional workers can be withdrawn from agri. sector only at a higher cost of lost food production because this will decrease the labor to land ratios. In this way, the  $MPL$  will be no more zero. Here, labor supply curve will become positively sloped along with the growth of modern sector. The structural transformation of the economy will take place through shifting traditional rural agriculture to modern urban industry.

#### Criticism on the Lewis Model:

Although Lewis two-sector development model is simple and roughly it is in conformity with the historical growth in the West, but it has following flaws and most of its assumptions do not fit in the institutional and economic realities of UDCs.

(i) Proportionality Between Employment Creation and Capital Accumulation: Lewis model assumes that there exists a proportionality in the labor transfer and employment creation in modern sector and rate of capital accumulation in the modern sector. The faster the rate of capital accumulation, the higher the growth rate of the modern sector and faster the rate of new job creation.

But if the capitalists reinvest their profits in the labor-saving capital equipment rather increasing the labor employment (what has been assumed in Lewis model) the jobs will not be created and modern sector will not expand. This happened in case of Pakistan where during 2nd five year plan, the wages remained constant and the capitalists rather re-ploughing their surplus shifted it to the 'Swiss Banks'. All this led to a resentment against the strategy of increasing the surpluses of capitalistic class. Now we employ a diagram where we shall show that labor demand curves do not shift uniformly outward. It is so because that increase in capital stock will embody labor saving technology.



In fig., it is obvious that even though the total output has grown substantially, i.e.,  $OD_2EL^* > OD_1EL^*$ . But the total wages remained  $OWEL^*$  and the employment also remained  $OL^*$ . Both remained unchanged. All of increase in output has accrued to capitalists in the form of excess profits. This may be given the name of "Anti-development" economic growth, all the extra income and output growth went to a few capitalists while

the income and employment levels for the masses of workers remained unchanged. In this way, total GNP would rise,

(ii) Peak Harvesting and Sowing Season: Lewis did not pay attention to the pattern of seasonality of labor demand in traditional agri. sector. According to Mehra, labor demand varies considerably and such demand is at its peak during the sowing and harvesting season. Thus during some months of the year the MPL may be above-zero. In such situation, the positive opportunity costs will involve in transferring the labor from agri. sector. As a result, the labor transfer will reduce agri. output

(iii) Rise in Urban Wages: According to Prof. Mabro the absorption of surplus labor itself may end prematurely because competitors (producers) may alter wage rates and lower the share of profit. It has been shown that rural-urban migration in Egyptian economy was accompanied by increase in wage rate of 15% and a fall in profits by 12%. Moreover, the wages in industrial sector were forced up directly by unions, civil service wage scales, minimum wage laws and MNCs (multi-national corporations) hiring practices tend to negate the role of competitive forces in the modern sector labor market. Again, the wages in subsistence sector may go up indirectly through rise in productivity in this sector.

(iv) Full Impact of Growing Population: Lewis model underestimates the full impact on the poor economy of a rapidly growing population, i.e., its effects on agri. surplus, the capitalist profit share, wage rates and overall employment opportunities. Similarly, Lewis assumed that the rate of growth in manufacturing sector would be identical to that in agri. sector. But, if industrial development involves more intensive use of capital than labor, then the flow of labor from agri. to industry will simply create more unemployment.

(v) Ignoring the Balanced Growth: Lewis ignored the balanced growth between agri. sector and industrial sector. But we know that there, exists a linkage between agri. growth and industrial expansion in poor countries. If a part of profits made by capitalists is not devoted to agri. sector, the process of industrialization would be jeopardized (perhaps, due to reduced supply of raw material). Because of this flaw, Ranis-Fei model considers the balanced growth of both sectors. This will be discussed after this model.

(vi) Ignoring the Role of Leakages: Lewis has ignored the role which the leakages can play in the economy. As Lewis assumed that all of increase in profits are diverted into savings. It means that savings of producers are equal to one. But, practically it is not so. The increase in profits may accompany the increase in consumption. As in Pakistan during 2nd plan the capitalistic class diverted their increased profits to palacious houses and conspicuous consumption. In such like situation the MPS out of profits will be less than one.

Again, it is not necessary that the capital formation will be made by the capitalistic class. The same may be done by the farmers producing cash crops. As the small farmers producing cash crops in Egypt have shown themselves to be quite capable of saving the required capital. Again, the World's largest Coca industry in Ghana is the result of creation of small enterprise capital formation.

(vii) Process of Migration is Neither Smooth Nor Costless: Lewis assumed that the transfer of unskilled labor from agri. to industry is regarded as almost smooth and costless. But, practically it is no so as industry requires different types of labor. If this problem is removed with the help of investment in education and skill formation, the process of migration will become costlier and expensive.

### **Unbalanced Growth Theory: Explanation, Process and Priorities**

According to Hirschman, "Development is a chain of disequilibria that must be kept alive rather than eliminate the disequilibrium of which profits and losses are symptoms in a competitive economy."

If economy is to keep moving ahead, the task of development policy is to maintain, tension, disproportions and disequilibria."

"Unbalanced growth is a better development strategy to concentrate available resources on types of investment, which help to make the economic system more elastic, more capable of expansion under the stimulus of expanded market and expanding demand"-H.W.Singer.

**According to Alak Ghosh,**

"Planning with unbalanced growth emphasizes the fact that during the planning period investment will grow at a higher rate than income and income at a higher rate than consumption."

It explains the unbalanced growth in terms of the growth rates of investment, income and consumption. If  $\Delta I/I$ ,  $\Delta Y/Y$  and  $\Delta C/C$  denote the rate of investment, income and consumption, then unbalanced growth implies

$$\Delta I/I > \Delta Y/Y > \Delta C/C$$

i.e., the growth rates are not uniform.

"Planners should concentrate on certain focal points, so as to achieve the goal of rapid economic development. The priorities should be given to those projects which ensure external economies to the existing firms, and those which could create demand for supplementary goods and services."

### **Explanation of the Theory:**

Albert O. Hirschman in his strategy of economic development goes a step further from Singer when he says that for accelerating the pace of economic development in the underdeveloped countries, it is advisable to create imbalances deliberately. He also recognized the inter-relatedness of different economic activities as done by Ragnar Nurkse. But he asserts that investment in selected industries or sectors would accelerate the pace of economic development.

He regarded, "Development is a chain disequilibria that must keep alive rather than eliminate the disequilibria, of which profits and losses are symptoms in a competitive economy". There would be 'seasaw advancement' as we move from one disequilibrium to another new disequilibrium situation.

Thus Hirschman argued that, "To create deliberate imbalances in the economy, according to a pre-designed strategy, is the best way to accelerate economic development." Hirschman is of the confirmed view that underdeveloped countries should not develop all the sectors simultaneously rather one or two strategic sectors or industries should be developed by making huge investment. In other words, capital goods industries should be preferred over consumer goods industries.

It is because capital goods industries accelerate the development of the economy, where development of consumer goods industries is the natural outcome. Hirschman has stated that, "If the economy is to be kept moving ahead, the task of development policy is to maintain tensions, disproportions and disequilibria."

### **Process of Unbalanced Growth:**

The strategy of unbalanced growth is most suitable in breaking the vicious circle of poverty in underdeveloped countries. The poor countries are in a state of equilibrium at a low level of income. Production, consumption, saving and investment are so adjusted to each other at an extremely low level that the state of equilibrium itself becomes an obstacle to growth. The only strategy of economic development in such a country is to break this low level equilibrium by deliberately planned unbalanced growth.

Prof. Hirschman is of the opinion that shortages created by unbalanced growth offer considerable incentives for inventions and innovations. Imbalances give incentive for intense economic activity and push economic progress.

**According to Prof. Hirschman, the series of investment can be classified into two parts:**

#### **1. Convergent Series of Investment:**

It implies the sequence of creation and appropriation of external economies. Therefore, investment made on the projects which appropriate more economies than they create is called convergent series of investment.

#### **2. Divergent Series of Investment:**

It refers to the projects which appropriate less economies than they create.

These two series of investment are greatly influenced by particular motives. For instance, convergent series of investments are influenced by profit motive which are undertaken by the private entrepreneurs. The latter is influenced by the objective of social desirability and such investment are undertaken by the public agencies.

In the words of Prof. Hirschman, "When one disequilibrium calls forth a development move which in turn leads to a similar disequilibrium and so on and infinitum in the situation private profitability and social desirability are likely to coincide, not because of external economies, but because input and output of external economies are same for each successive venture." Thus, growth must aim at the promotion of divergent series of investment in which more economies are created than appropriated.

Development policy, therefore, should be so designed that may enhance the investment in social overhead capital (SOC) is created external economies and discourage investment in directly productive activities (DPA).

### **Unbalancing the Economy:**

Development, according to Hirschman, can take place only by unbalancing the economy. This is possible by investing either in social overhead capital (SOC) or indirectly productive activities (DPA). Social overhead capital creates external economies whereas directly productive activities appropriate them.

#### **(i) Excess of investment in Social Overhead Capital:**

Social over-head capital are concerned with those series without which primary, secondary and tertiary services cannot function. In SOC we include investment on education, public health, irrigation, water drainage, electricity etc. Investment in SOC favorably affect private investment in directly productive activities (DPA).

Investment in SOC is called autonomous investment which is made with the motive of private profit. Investment in SOC provide, for instance, cheap electricity, which would develop cottage and small scale industries. Similarly irrigation facilities lead to development of agriculture. As imbalance is created in SOC, it will lead to investment in DPA.

#### **(ii) Excess of Investment in Directly Productive Activities:**

Directly productive activities include those investments which lead to direct increase in the supply of goods and services. Investment in DPA means investment in private sector which is done with a view to maximize profit. In those projects, investment is made first where high profits are expected. In this way, DPA are always induced by profits.

#### **Priorities: Excess SOC or Excess DPA:**

##### **(a) Unbalancing the economy with SOC:**

Imbalance can be created both by SOC and DPA. But the question before us is that in which direction the investment should be made first so as to achieve continuous and sustained economic growth. The answer is quite simple. The government should invest more in order to reap these economies, the private investors would make investment in order to enjoy profits. This would raise the production of goods and services. Thus investment in SOC would bring automatically investment in DPA.

##### **(b) Unbalancing the economy with DPA:**

In case investment is made first in DPA, the private investors would be facing a lot of problems in the absence of SOC. If a particular industry is setup in a particular region, that industry will not expand if SOC facilities are not available. In order to have SOC facilities, the industry has to put political pressure. That is really a tough job. Thus, excess DPA path is full of strains or pressure- creating whereas excess SOC path is very smooth or pressure relieving.

### **POVERTY**

Poverty types can be of different like absolute poverty and relative poverty. There may be many other classifications like urban poverty, rural poverty, primary poverty, secondary poverty and many more. Whatever be the poverty types, the basic reason has always been the lack of adequate income. Here comes the role of unemployment behind poverty.

Lack of employment opportunities and the consequential income disparity bring about mass poverty types in most of the developing and underdeveloped economies of the world.

### Absolute Poverty

Poverty types is usually measured as either absolute or relative poverty (the latter being actually an index of income inequality). Absolute poverty refers to a set standard which is consistent over time and between countries.

The [World Bank](#) defines extreme poverty as living on less than US \$1.25 (PPP) per day, and moderate poverty as less than \$ 2 a day (but note that a person or family with access to subsistence resources, e.g. subsistence farmers, may have low cash income without a correspondingly low standard of living – they are not living on their cash income but using it as a top up). It estimates that in 2001, 1.1 billion people had consumption level below 1\$ a day and 2.7\$ billion lived on less than \$2 a day.

### Relative Poverty

Relative poverty views poverty as socially defined and dependent on social context, hence relative poverty is a measure of income inequality. Usually, relative poverty is measured as the percentage of the population with income less than some fixed proportion of median income. There are several other income inequality metrics, for example for Gini coefficient or the Theil Index.

Relative poverty measures are used as official poverty rates in several developed countries. As such these poverty statistics measure inequality rather than material deprivation or hardship. The measurements are usually based on a person's yearly income and frequently take no account of total wealth. The main poverty line used in the OECD and the European Union is based on 'economic distance' a level of income is set at 60% of the median household income.

### Multidimensional Poverty Index

The multidimensional Poverty Index (MPI) was developed in 2010 by Oxford Poverty and Human Development Initiative and the United Nations Development Program. The MPI is an index of acute multidimensional poverty. It reflects deprivations in very rudimentary services and core human functioning for people across 104 countries. Although deeply constrained by data limitations, MPI reveals a different pattern of poverty than income poverty, as it illuminates a different set of deprivations.

The MPI has three dimensions – health, education, and standard of living. These are measured using ten indicators. Each dimension and each indicator within a dimension are equally weighted.



#### These 10 indicators are used to calculate the MPI:

##### ***Education (each indicator is weighted equally at 1/6)***

- Years of Schooling – Deprived if no household member has completed five years of schooling.
- Child Enrollment – Deprived if any school-aged child is not attending school in years 1 to 8.

##### ***Health (each indicator is weighted equally at 1/6)***

- Child Mortality – Deprived if any child has died in the family
- Nutrition – Deprived if any adult or child for whom there is nutritional information is malnourished.

***Standard of Living (each indicator is weighted equally at 1/18)***

- Electricity – Deprived if the household has no electricity.
- Sanitation – Deprived if they do not have an improved toilet or if their toilet is shared (MDG Definition).
- Drinking Water – Deprived if the household does not have access to clean drinking water or clean water is more than 30 minutes walk from home (MDG Definition).
- Floor – Deprived if the household has dirt, sand or dung floor.
- Cooking Fuel – Deprived if they cook with wood, charcoal or dung.
- Assets – Deprived if the household does not own more than one of radio, TV, telephone, bike or motorbike.

A person is considered poor if they are deprived in at least 30% of the weighted indicators. The intensity of poverty denotes the proportion of indicators in which they are deprived.

**Role of Agriculture in the Economic Development of a Country****Measuring Poverty/Poor Indicators**

Some of the major role of agriculture in economic development of a country are as follows:

Agricultural sector plays a strategic role in the process of economic development of a country.

It has already made a significant contribution to the economic prosperity of advanced countries and its role in the economic development of less developed countries is of vital importance.

In other words, where per capita real income is low, emphasis is being laid on agriculture and other primary industries.

"Increase in agricultural production and the rise in the per-capita income of the rural community, together with the industrialisation and urbanisation, lead to an increased demand in industrial production"-Dr. Bright Singh.

The history of England is clear evidence that Agricultural Revolution preceded the Industrial Revolution there. In U.S.A. and Japan, also agricultural development has helped to a greater extent in the process of their industrialisation. Similarly, various under-developed countries of the world engaged in the process of economic development have by now learnt the limitations of putting over-emphasis on industrialisation as a means to attain higher per capita real income. "Thus industrial and agricultural developments are not alternatives but are complementary and are mutually supporting with respect to both inputs and outputs."

It is seen that increased agricultural output and productivity tend to contribute substantially to an overall economic development of the country, it will be rational and appropriate to place greater emphasis on further development of the agricultural sector.

According to Prof. Kinderberger, Todaro, Lewis and Nurkse etc., agriculture makes its contribution to economic development in several ways, viz.,:

- (1) By providing food and raw material to non-agricultural sectors of the economy,
- (2) By creating demand for goods produced in non-agricultural sectors, by the rural people on the strength of the purchasing power, earned by them on selling the marketable surplus,
- (3) By providing investable surplus in the form of savings and taxes to be invested in non-agricultural sector,
- (4) By earning valuable foreign exchange through the export of agricultural products,

(5) Providing employment to a vast army of uneducated, backward and unskilled labour. As a matter of fact, if the process of economic development is to be initiated and made self-sustaining, it must begin for agricultural sector.

#### **Role of Agriculture in Economic Development:**

The agriculture sector is the backbone of an economy which provides the basic ingredients to mankind and now raw material for industrialisation.

Therefore, the role of agriculture for the development of an economy may be stated as below:

#### **1. Contribution to National Income:**

The lessons drawn from the economic history of many advanced countries tell us that agricultural prosperity contributed considerably in fostering economic advancement. It is correctly observed that, "The leading industrialized countries of today were once predominantly agricultural while the developing economies still have the dominance of agriculture and it largely contributes to the national income. In India, still 28% of national income comes from this sector.

#### **2. Source of Food Supply:**

Agriculture is the basic source of food supply of all the countries of the world—whether underdeveloped, developing or even developed. Due to heavy pressure of population in underdeveloped and developing countries and its rapid increase, the demand for food is increasing at a fast rate. If agriculture fails to meet the rising demand of food products, it is found to affect adversely the growth rate of the economy. Raising supply of food by agricultural sector has, therefore, great importance for economic growth of a country.

Increase in demand for food in an economy is determined by the following equation:

$$D = P + 2g$$

Here,

D stands for Annual Rate of Growth in demand for food.

P stands for Population Growth Rate.

g stands for Rate of Increase in per Capita Income.

2 stand for Income Elasticity of Demand for Agricultural Products.

#### **3. Pre-Requisite for Raw Material:**

Agricultural advancement is necessary for improving the supply of raw materials for the agro-based industries especially in developing countries. The shortage of agricultural goods has its impact upon on industrial production and a consequent increase in the general price level. It will impede the growth of the country's economy. The flour mills, rice shellers, oil & dal mills, bread, meat, milk products sugar factories, wineries, jute mills, textile mills and numerous other industries are based on agricultural products.

#### **4. Provision of Surplus:**

The progress in agricultural sector provides surplus for increasing the exports of agricultural products. In the earlier stages of development, an increase in the exports earning is more desirable because of the greater strains on the foreign exchange situation needed for the financing of imports of basic and essential capital goods.

Johnson and Mellor are of the opinion, "In view of the urgent need for enlarged foreign exchange earnings and the lack of alternative opportunities, substantial expansion of agricultural export production is frequently a rational policy even though the world supply—demand situation for a commodity is unfavorable."

#### **5. Shift of Manpower:**

Initially, agriculture absorbs a large quantity of labour force. In India still about 62% labour is absorbed in this sector. Agricultural progress permits the shift of manpower from agricultural to non-agricultural sector. In the initial stages, the diversion of labour from agricultural to non-agricultural sector is more important from the point of view of economic development as it eases the burden of surplus labour force over the limited land. Thus, the release of surplus manpower from the agricultural sector is necessary for the progress of agricultural sector and for expanding the non-agricultural sector.

#### **6. Creation of Infrastructure:**

The development of agriculture requires roads, market yards, storage, transportation railways, postal services and many others for an infrastructure creating demand for industrial products and the development of commercial sector.

#### **7. Relief from Shortage of Capital:**

The development of agricultural sector has minimized the burden of several developed countries who were facing the shortage of foreign capital. If foreign capital is available with the 'strings' attached to it, it will create another significant problem. Agriculture sector requires less capital for its development thus it minimizes growth problem of foreign capital.

#### **8. Helpful to Reduce Inequality:**

In a country which is predominantly agricultural and overpopulated, there is greater inequality of income between the rural and urban areas of the country. To reduce this inequality of income, it is necessary to accord higher priority to agriculture. The prosperity of agriculture would raise the income of the majority of the rural population and thus the disparity in income may be reduced to a certain extent.

#### **9. Based on Democratic Notions:**

If the agricultural sector does not grow at a faster rate, it may result in the growing discontentment amongst the masses which is never healthy for the smooth running of democratic governments. For economic development, it is necessary to minimize political as well as social tensions. In case the majority of the people have to be kindled with the hopes of prosperity, this can be attained with the help of agricultural progress. Thus development of agriculture sector is also relevant on political and social grounds.

#### **10. Create Effective Demand:**

The development of agricultural sector would tend to increase the purchasing power of agriculturists which will help the growth of the non-agricultural sector of the country. It will provide a market for increased production. In underdeveloped countries, it is well known that the majority of people depend upon agriculture and it is they who must be able to afford to consume the goods produced.

Therefore, it will be helpful in stimulating the growth of the non-agricultural sector. Similarly improvement in the productivity of cash crops may pave the way for the promotion of exchange economy which may help the growth of non-agricultural sector. Purchase of industrial products such as pesticides, farm machinery etc. also provide boost to industrial dead out.

#### **11. Helpful in Phasing out Economic Depression:**

During depression, industrial production can be stopped or reduced but agricultural production continues as it produces basic necessities of life. Thus it continues to create effective demand even during adverse conditions of the economy.

#### **12. Source of Foreign Exchange for the Country:**

Most of the developing countries of the world are exporters of primary products. These products contribute 60 to 70 per cent of their total export earning. Thus, the capacity to import capital goods and machinery for industrial development depends crucially on the export earning of the agriculture sector. If exports of agricultural goods fail to increase at a sufficiently high rate, these countries are forced to incur heavy deficit in the balance of payments resulting in a serious foreign exchange problem.

However, primary goods face declining prices in international market and the prospects of increasing export earnings through them are limited. Due to this, large developing countries like India (having potentialities of industrial development) are trying to diversify their production structure and promote the exports of manufactured goods even though this requires the adoption of protective measures in the initial period of planning.

### **13. Contribution to Capital Formation:**

Underdeveloped and developing countries need huge amount of capital for its economic development. In the initial stages of economic development, it is agriculture that constitutes a significant source of capital formation.

Agriculture sector provides funds for capital formation in many ways as:

- (i) agricultural taxation,
- (ii) export of agricultural products,
- (iii) collection of agricultural products at low prices by the government and selling it at higher prices. This method is adopted by Russia and China,
- (iv) labour in disguised unemployment, largely confined to agriculture, is viewed as a source of investible surplus,
- (v) transfer of labour and capital from farm to non-farm activities etc.

### **14. Employment Opportunities for Rural People:**

Agriculture provides employment opportunities for rural people on a large scale in underdeveloped and developing countries. It is an important source of livelihood. Generally, landless workers and marginal farmers are engaged in non-agricultural jobs like handicrafts, furniture, textiles, leather, metal work, processing industries, and in other service sectors. These rural units fulfill merely local demands. In India about 70.6% of total labour force depends upon agriculture.

### **15. Improving Rural Welfare:**

It is time that rural economy depends on agriculture and allied occupations in an underdeveloped country. The rising agricultural surplus caused by increasing agricultural production and productivity tends to improve social welfare, particularly in rural areas. The living standard of rural masses rises and they start consuming nutritious diet including eggs, milk, ghee and fruits. They lead a comfortable life having all modern amenities—a better house, motor-cycle, radio, television and use of better clothes.

### **16. Extension of Market for Industrial Output:**

As a result of agricultural progress, there will be extension of market for industrial products. Increase in agricultural productivity leads to increase in the income of rural population which in turn leads to more demand for industrial products, thus development of industrial sector.

According to Dr. Bright Singh, "Increase in agricultural production and the rise in the per-capita income of the rural community, together with the industrialisation and urbanisation, lead to an increased demand in industrial production." In this way, agricultural sector helps promote economic growth by securing as a supplement to industrial sector.

### **Conclusion:**

From the above cited explanation we conclude that agricultural development is a must for the economic development of a country. Even developed countries lay emphasis on agricultural development. According to Muir, "Agricultural progress is essential to provide food for growing non-agricultural labour force, raw materials for industrial production and saving and tax revenue to support development of the rest of the economy, to earn foreign exchange and to provide a growing market for domestic manufactures."

### **INTERNATIONAL TRADE:**

International Trade refers to the exchange of products and services from one country to another. In other words, imports and exports. International trade consists of goods and services moving in two directions: 1. Imports – flowing into a country from abroad. 2. Exports – flowing out of a country and sold overseas.

Visible trade refers to the buying and selling of goods – solid, tangible things – between countries. Invisible trade, on the other hand, refers to services.

Most economists globally agree that international trade helps boost nations' wealth.

When a person or company purchases a cheaper product or service from another country, living standards in both nations rise.

There are several reasons why we buy things from foreign suppliers. Perhaps, the imported options are cheaper. Their quality may also be better, as well as their availability

The exporter also benefits from sales that would not be possible if it solely sold to its own market. The exporter may also earn foreign currency. It can subsequently use that foreign currency to import things.

The term 'commerce' is often (not always) used when referring to the buying and selling of goods and services internationally.

#### **International trade - winners and losers**

Not every single entity, however, gains from international trade. Let's suppose there are two countries – Country A and Country B. What happens if it costs more for Country A producers to make something than for Country B producers? Specifically, what happens if the two countries trade?

Producers in Country A will subsequently lose out because consumers will buy the Country B option. They choose that option because it is cheaper.

However, the consumer gains more than the domestic producer loses, economists say.

With international trade, there is greater competition and more competitive pricing in the market. This means that consumers have more choice and more affordable options. The economy of the world – which is driven by supply and demand – also benefits.

Imagine one world in which every single country traded internationally. Now imagine another world where international trade did not exist. In which world would consumers be better off? Also, in which world would the countries be richer.

In the world with international trade, both the consumers and the countries would be better off.

#### **Adam Smith - International Trade**

Adam Smith (1723-1790), a Scottish moral philosopher and pioneer of political economy, believed in international trade. Many economists today call Smith the 'father of modern economics.' (Image: adamsmith.org)

#### **Why does international trade exist?**

Nations trade internationally when there are not the resources or capacity to satisfy domestic needs and wants domestically.

By developing and exploiting their domestic resources, countries can produce a surplus. They may use this surplus to buy goods they need from abroad, i.e., through international trade.

International trade has existed for more than 9,000 years. Long distance trade – before the existence of nation states and national borders – goes back much further. In fact, it goes back to when pack animals and ships first came onto the scene.

Our modern industrialized world would not exist if countries did not import and export. Put simply; international trade is at the heart of today's global economy. Global interdependence is a fact of life for every country today.

#### We import goods and services for several reasons. Below are some reasons:

- Price: a foreign company can produce something more cheaply.
- Quality: may be superior abroad. For example, Scotch whisky from Scotland, in most people's opinion, is superior to any local alternative. That is why Scotland exports about 37 bottles of Scotch every second.
- Availability: it might not be possible to produce the item locally. Therefore, the only way consumers can buy it is by importing it.

A raw material, such as oil, iron, bauxite, gold, etc. might not exist at home. Japan, for example, has no domestic reserves of oil. However, it is the fourth largest consumer of oil in the world. Japan imports virtually all its oil.

- Demand: might be greater than local supply. To satisfy the difference, it is necessary to import.

#### Advantages of international trade

- Comparative Advantage: trade encourages a nation to specialize in producing or supplying only those goods and services which it can deliver more effectively and at the best price, after taking into account opportunity cost.
- Economies of Scale: if you sell your goods globally, you will have to produce more than if you sold just domestically. Producing in higher volumes provides greater economies of scale. In other words, the cost of producing each item is lower.
- Competition: international trade boosts competition. This, in turn, is good for prices and quality. If suppliers have to compete more, they will work harder to sell at the lowest price and best quality possible. Consumers benefit by having more choice, more money left over, and top-quality goods.
- Transfer of Technology: increases thanks to international trade. Transfer of technology goes from the originator to a secondary user. In fact, that secondary user is often a developing nation.
- Jobs: great trading nations such as Japan, Germany, the UK, the USA, and South Korea have one thing in common. They have much lower levels of unemployment than protectionist countries.

#### Disadvantages of International Trade

- Over-Specialization: employees might lose their jobs in large numbers if global demand for a product declines.
- New Companies: find it much harder to grow if they have to compete against giant foreign firms.
- National Security: if a country is totally dependent on imports for strategic industries, it is at risk of being held to ransom by the exporter(s). Strategic industries include food, energy and military equipment.

#### Blocking trade harms the economy

Blocking trade in the hope of giving domestic infant companies a chance to grow hurts the national economy. Specifically, it harms the country's economy's long-term prospects.

When governments adopt a protectionist policy, other nations retaliate. Subsequently, there are tit-for-tat responses and sometimes even trade wars. Eventually, unemployment rises, and the creating of wealth declines.

Since the turn of the century, Venezuela has pursued a policy of nationalization and protectionism. Protectionism refers to taking measures to reduce imports.

Venezuela has the world's largest oil reserves. However, its economy has been shrinking for years. There are alarming shortages of basic items, and electric power is frequently cut across vast regions. In fact, there are now signs of serious social unrest.

In every single case, the world's greatest trading nations are also by far the richest. Germany, the Netherlands, Singapore, Japan and Hong Kong are considerably wealthier than, for example Cuba, North Korea, Zimbabwe, and Venezuela.

### **International trade tariffs**

Although international trade exists across the world, imports and exports are regulated by quotas and mandates from each country's customs authority. The importing nation may impose a tariff – a tax – on certain products.

Some markets have special trade deals which list what goods may be freely traded, and which ones are restricted.

The European Union has 27 member states which can trade freely with each other – there are no tariffs or quotas. On June 23rd, 2016, the British electorate voted in a referendum to leave the European Union (EU). The UK now has two options: pursue a Hard or Soft Brexit (BRitain EXITing the EU).

With a Soft Brexit, the UK would still have unfettered access to the EU's 500 million consumers but would have to sign up to the free movement of people. With a Hard Brexit, the country would regain total control of its borders but would lose free access to the market. Tariffs on goods exported to the EU would be between 10% and 20% with a Hard Brexit.

NAFTA (North American Free Trade Agreement) consists of three countries – the USA, Canada and Mexico – which also trade freely with each other.

The Global System of Trade Preferences (GSTP) is a preferential trade agreement between emerging economies and LDCs. LDC stands for Less Developed Country. In most cases, the agreements involve either lifting or reducing tariffs. However, the LDC member nations do not have to reciprocate.

### **TRADE IN INDIA**

Trade and commerce have been the backbone of the Indian economy right from ancient times. Textiles and spices were the first products to be exported by India. The Indian trade scenario evolved gradually after the country's independence in 1947. From the 1950s to the late 1980s, the country followed socialist policies, resulting in protectionism and heavy regulations on foreign companies conducting trade with India.

### **INDIAS TRADE IMPORTS:**

India's major imports comprise of crude oil machinery, military products, fertilizers, chemicals, gems, antiques and artworks. Imported goods are divided into the following categories: Freely importable items: For these items, no import license is required. They can be freely imported by an individual or a firm. Canalized items: These items can only be imported by public sector firms. For example petroleum products fall under this category. Prohibited items: Items such as unprocessed ivory, animal rennet and tallow fat cannot be exported to India.

### **INDIAS TRADE EXPORTS**

Indian exports comprise mainly of engineering and textile products, precious stones, petroleum products, jewelry, sugar, steel chemicals, zinc and leather products. Most of the exported goods are exempt from export duties. India also exports services to several countries, primarily to the US. In fact, India is among the world's largest exporters of services related to information and communication technology (ICT). It is also the key destination for business process outsourcing (BPO).

### **EXIM BANK**

Set up by an act of parliament in September 1981 Wholly owned by Government of India – Commenced operations in march, 1982 – Established "for providing financial assistance – to exporters and importers, and

for functioning as the principal financial institution for coordinating the working of institutions engaged in financing export and import of goods and services with a view to promoting the country's international trade..."

### **What is economic globalization?**

Economic globalization refers to the mobility of people, capital, technology, goods and services internationally. It is also about how integrated countries are in the global economy. It refers to how interdependent different countries and regions have become across the world.

In the eighteen hundreds in the world economy generally, people and capital crossed borders with ease, but not goods. In this century, people do not cross borders easily, but technologies, capital and goods do.

Over the past two to three decades, under the framework of General Agreement on Tariffs and Trade (GATT) and World Trade Organization, economic globalization has been expanding at a much faster pace. Countries have rapidly been cutting down trade barriers and opening up their current accounts and capital accounts.

This rapid increase in pace has occurred mainly with advanced economies integrating with emerging ones. They have done this by means of foreign direct investment and some cross-border immigration. They have also reduced trade barriers.

In some regions of the world, such as the European Union, a large area almost the size of a continent has opened up to the free movement of capital, labor, goods and services. The North American Free Trade Agreement (NAFTA) opened up the free movement of goods and services, but not labor.

Cuba and North Korea are among the most autarkic (self-sufficient) and isolated nations on the planet. The two countries are the last bastions of the Soviet economic model.

Economic globalization linked to greater wealth and inequality

While becoming more integrated into the global economy tends to bring increased wealth to a nation, globalization is commonly linked to greater inequality.

### **According to the United Nations:**

"Economic globalization refers to the increasing interdependence of world economies as a result of the growing scale of cross-border trade of commodities and services, flow of international capital and wide and rapid spread of technologies. It reflects the continuing expansion and mutual integration of market frontiers, and is an irreversible trend for the economic development in the whole world at the turn of the millennium."

Economic development, apart from GDP growth, also includes improvements in literacy, life expectancy, and people's well-being.

Does globalization cause wealth inequality  
The big debate: 'Does globalization bring inequality, or is it just coincidence?'

### **Advances in science and technology**

The United Nations says the fast globalization of the world's economies over recent decades is mainly due to the rapid development of science and technologies. They have created an environment in which the market economic system can spread across frontiers.

For example, the Internet and electronic communications today mean that businesses can employ workers from virtually anywhere in the world, and can trade in several countries at the same time without having to physically open up branches there.

Thanks to scientific and technological progress, transportation and communication costs today are just a fraction of what they used to be. Compared to 1930, current shipping costs are today about 50% cheaper, airfreight costs are now just 1/6 of what they were 85 years ago, while communication costs are just 1% of what they were.

With what it used to cost to buy a computer in 1960 (in today's dollars), you could buy 125 of them by 1990, and four times that number by 1998. All these advances in science, technology and communications have helped drive economic globalization.

The Internet and electronic communications have allowed advanced economies to outsource many of their jobs offshore. In the US, Canada, and EU, millions of jobs have been transferred abroad. Call center positions, especially, have gone overseas. These jobs have gone mainly to India, the Caribbean, and other English-speaking emerging economies.

The economic systems that exist in the world today are much more complex than in ancient times, when humans survived by hunting and subsistence farming.

### **Globalization of the automotive industry**

Today, the automotive industry has companies producing vehicle parts and then assembling them in several countries. Most current parts production, assembly and vehicle sales take place in integrated regions.

These car production regions include MERCOSUR in Latin America, ASEAN in Asia, and NAFTA in North America. They also include the European Union and CIS for the former Soviet Bloc countries.

Within those regions, certain countries stand out – in China, Brazil, Mexico, Russia and India, car production and assembly have increased dramatically over the past 20 years.

The city of Detroit in the United States is still synonymous with auto manufacturing. America's 'Big Three,' i.e., Ford, General Motors and Chrysler, are still based there. However, the expansion in those three companies' operations have occurred outside the city, and mainly abroad.

### **Does globalization bring more inequality?**

As the world has become more economically globalized, so has the income and wealth inequality within countries. Some people believe globalization is the cause – this has so far been difficult to prove.

They argue that if companies have access to the whole world market, and most of those companies are located in a few countries – the US, EU and Japan – they will suck money out of the whole world in much greater quantities than if they sold just within their own markets.

The counter-argument is that globalization brings well-paid jobs (compared to local pay rates) to emerging economies. A Ford factory worker in Mexico earns more and has better workplace conditions than he would as a farm laborer.

When looking at inequality between nations, however, globalization has coincided with more equality between the advanced and emerging economies. The rich countries today represent a smaller percentage of global GDP compared to twenty or thirty years ago.

Wealth inequality is not only a problem within emerging and low-income nations – it is also increasing in the advanced economies.

### **Least Developed Countries**

The Least Developed Countries (LDCs) is a list of developing countries that, according to the United Nations, exhibit the lowest indicators of socioeconomic development, with the lowest Human Development Index ratings of all countries in the world. The concept of LDCs originated in the late 1960s and the first group of LDCs was listed by the UN in its resolution 2768 (XXVI) of 18 November 1971.

#### **A country is classified among the Least Developed Countries if it meets three criteria:**

Poverty – adjustable criterion based on GNI per capita averaged over three years. As of 2018 a country must have GNI per capita less than US \$1,025 to be included on the list, and over \$1,230 to graduate from it.

Human resource weakness (based on indicators of nutrition, health, education and adult literacy).

Economic vulnerability (based on instability of agricultural production, instability of exports of goods and services, economic importance of non-traditional activities, merchandise export concentration, handicap of economic smallness, and the percentage of population displaced by natural disasters).

### **ECONOMIC PLANNING**

Economic Planning is a term used to describe the long term plans of government to co-ordinate and develop the economy with efficient use of resources. Economic planning in India was started in 1950 after independence, it was deemed necessary for economic development and growth of the nation.

The idea of Five year planning was taken from the erstwhile Soviet Union under socialist influence of first Prime Minister Jawahar Lal Nehru.

#### **Long term objectives of our Five Year Plans are:**

- A high rate of growth to improve the standard of living of residents.
- Economic self-reliance.
- Social justice and reduction of inequalities.
- Modernization of the economy.
- Economic stability for prosperity.

#### **Planning in india**

- **1938:** 'National Planning Committee' was established under the chairmanship of Jwahar Lal Nehru by the Indian National Congress. Its recommendations could not be implemented because of the beginning of the Second World War and changes in the Indian political situation.
- **1944:** 'Bombay Plan' was presented by 8 leading industrialists of Bombay.
- **1944:** 'Gandhian Plan' was given by Shriman Narayan Agarwal.
- **1945:** 'People's Plan' was given by M N Roy.
- **1950:** 'Sarvodaya Plan' was given by J P Narayan. A few points of this plan were accepted by the Government.

#### **THE PLANNING COMMISSION OF INDIA:**

- ❖ The Planning Commission was set – up on **March 15, 1950** under the chairmanship of **JL Nehru**, by a resolution of Union Cabinet.
- ❖ It is an extra – constitutional, non – statutory body. (i.e., No provision in Constitution for its formulation.)
- ❖ It consists of Prime Minister as the ex – officio Chairman, one Deputy – Chairman appointed by the PM and some full time members.
- ❖ The tenure of its members and deputy chairman is not fixed. There is no definite definition of its members also. They are appointed by the Government on its own discretion. The number of members can also change according to the wishes of the Government.

#### **GOVERNMENT'S 1950 RESOLUTION**

##### **Functions**

- 1) To make an assessment of the material, capital and human resources of the country, including technical personnel, and investigate the possibilities of augmenting those resources which are found to be deficient in relation to the nation's requirement.
- 2) To formulate a plan for the most effective and balanced utilization of country's resources.
- 3) To define the stages, on the basis of priority, in which the plan should be carried out and propose the allocation of resources for the due completion of each stage.
- 4) To indicate the factors that tend to retard economic development.
- 5) To determine the conditions which need to be established for the successful execution of the plan within the incumbent socio-political situation of the country.
- 6) To determine the nature of the machinery required for securing the successful implementation of each stage of the plan in all its aspects.

7) To appraise from time to time the progress achieved in the execution of each stage of the plan and also recommend the adjustments of policy and measures which are deemed important vis-a-vis a successful implementation of the plan.

8) To make necessary recommendations from time to time regarding those things which are deemed necessary for facilitating the execution of these functions. Such recommendations can be related to the prevailing economic conditions, current policies, measures or development programmes. They can even be given out in response to some specific problems referred to the commission by the central or the state governments.

#### NATIONAL DEVELOPMENT COUNCIL INDIA

- ❖ All the plans made by the Planning Commission have to be approved by National Development Council first. It was constituted to build co-operation between the States and the Planning Commission for economic planning.

- ❖ It is an extra-constitutional and extra-legal body.

- ❖ It was set-up on **August 6, 1952**, by a proposal of the Government. The PM is the ex-officio chairman of NDC. Other members are Union Cabinet Ministers, Chief Ministers and Finance Ministers of all States, Lt. Governors of Union Territories and Governors of Centrally-ruled States.

#### POINTS TO REMEMBER:

- ❖ Planning commission is a non-constitution body.
- ❖ It is central body for making plans in India.
- ❖ A book entitled Planned Economy For India was published in **1934 by Sir M Vishweshwarya**.
- ❖ Indian national congress constituted a National Planning committee in 1938 to discuss the requirement & possibility of planning in India. Pundit Jawaharlal Nehru was the president at that time of this committee.
- ❖ In 1944 a plan called **Bombay Plan** was presented by eight industrialists of Bombay. Thereafter in the same year 1944 **Gandhian plan** by Mannaragan in 1945, the peoples plan by labour leader MN Raj and in 1950 the **Sarvodaya plan** by Mr. Jai Prakash Narayan were presented.
- ❖ Planning commission constituted on 15th March 1950
- ❖ First chairman of planning commission was **Pt. Jawaharlal Nehru**.
- ❖ Prime minister of India is the ex-officio chairman of planning commission. There is also a deputy chairman of Planning Commission.
- ❖ The National development council **NDC was formed on 6th August 1952**.
- ❖ Format of five years plan came in 1951.
- ❖ Concept of planning commission is derived from **Russia USSR**.
- ❖ It was constituted by union cabinet on the proposal of a member of union parliament.
- ❖ Planning commission is approved by NDC (national development council).
- ❖ NDC is non-statutory body which is built to co-operate between states & planning commission.
- ❖ Planning commission is in concurrent list.
- ❖ The members of planning commission are appointed by the government.
- ❖ Second five year plan- **Prof P C Mahalanobis**.
- ❖ Eleventh five year plan- **Prof C Rangarajan**.

#### 1) **First five year plan (1st April 1951 to 31st March 1956).**

- ❖ Rehabilitation of refugees from Pakistan.
- ❖ To check inflationary tendency.
- ❖ Agriculture was given a highest priority.
- ❖ To solve food problems.
- ❖ Reconstruct economy damaged due to war.
- ❖ Revival of small and cottage industries.
- ❖ Community development programme (NDC came on 6th Aug. 1952).

#### 2) **Second five year plan (1956 to 1961).**

- ❖ Prep by Prof P C Mahalanobis.
- ❖ Basically industrial policy resolution 1956 based on socialist pattern of society.
- ❖ Faster growth of national income.

- Rapid industrialization with special emphasis on basic and heavy industries.
- To reduce inequality of income & wealth.
- Expansion in employment opportunities.
- Steel plant at Bhilai, Rourkela, Durgapur.
- Shortage of foreign exchange.

**3) Third five year plan (1961 to 1966).**

- To make Indian Economy self-reliant and self-sustain economy.
- Development of Agriculture.
- Self-reliance in food grains.
- Balanced regional development.
- Two war Indo-china (1962) Indo-Pak (1965) as ill-fated plan.
- India also faced drought in 1965-1966.
- Reduce inequality of Income & wealth.
- Optimum utilization of country's labour power.

**4) Three Annuals plan (1966 to 1969).**

- To overcome the ill effects of war.
- To solve the food problem.
- To prepare base for fourth plan.
- Green revolution (1966-1967) to develop new varieties of seeds.
- Currency devaluation (1966 June).
- Economist called this period 1966 to 1969 as plan holiday, also known as GADGIL PLAN.

**5) Fourth five year plan (1969 to 1974).**

- Growth with stability and progress towards self-reliance.
- Establishment of buffer stock.
- Implement family planning.
- To develop public sector, reduce regional imbalance.
- Balanced development of all the sectors.
- MRTP act came.
- Oil crisis, population explosion, war with Pakistan, 14 banks nationalized.

**6) Fifth five year plan (1974 to 1979).**

- Janata government declared this plan closed one year prior to its schedule.
- Eradication of poverty (GRABI HATAO).
- Attainment of self-reliance.
- >National programme for primary education, drinking water, medical facilities in rural areas, nourishing food, and land for houses of landless labor, rural roads, electrification, cleanliness.
- Policy of import substitution and export promotion.
- Prepared by planning commission.
- Reduce regional economic, social inequality, unemployment problem.
- Prohibition of unnecessary consumption price wage policy.
- Janata government terminated in 1978.

**7) Annual/ rolling plan (1978 to 1980).**

- Janata Government fail in 1978.
- Reduce poverty.
- Reduce unemployment.
- Also called rolling plan.

**8) Sixth five year plan (1st April 1980 to 31st March 1985).**

- Generate employment.
- Control population explosion.

- Efficient use of resources.
- Modernization.
- Encourage people to participate in education.
- Policy adopted to control population explosion.
- Rapid efficient utilization of energy resources.
- Indian economy made all round progress.
- Integrated rural development.
- Minimum needs programme.
- Industrial development regulation.
- Drought (1984-85).

**9) Seventh five Year plan (1st April to 31st march 1990).**

- Progress towards a social system based on equality & justice.
- Prepare a firm base for technological development in industrial & agriculture.
- Ecological & environment protection.
- Productive employment.
- First time private sector was given priority.

**10) Annual plan (1990-1992).**

- Due to economic crisis.
- Political instability at center.
- New industrial policy was announced.
- Considered the beginning of large scale liberalization in Indian economy.
- LPG Policy came under this

**11) Eighth five year plan (1992 to 1997).**

- Human resource development.
- Primary education, drinking water, health. Vaccination in all villages & complete elimination of scavengers.
- Eliminate illiteracy among people of ages 15-35 years.
- Universalization of primary education & 100% literacy in the age 06 to 14 years.
- Achieving full employment by the end of century.
- Sufficient employment opportunity.
- PMRY- Pradhan Mantri Rojgar Yojana and many more Yojanas came.
- Basic infrastructure (energy transport, communication, irrigation)

**12) Ninth five year plan (1997 to 2002)**

- Growth with equity and distributive justice.
- Equitable distribution and growth with equality.
- To give priority to the development of agriculture and villages for eradicating poverty.
- To accelerate pace of economic development by keeping the price stable & under control.
- To create sufficient productive employment.
- Improve lifestyle, remove environmental imbalances.
- To ensure provision of food and nourishment to all and especially to weaker sections of society.
- To provide the basic minimum services like clean drinking water, primary health care facility, universal primary education & housing (basic facilities).
- To control population growth rate.
- To encourage & develop the mass participation institutions, co-operative & voluntary sections.
- To provide strengthen to women especially the weaker sections of SC & ST & backward castes, handicap.
- NEAS- national employment assurance scheme.
- To ensure better life, improve living of standard of people

**13) Tenth five year plan (2002 to 2007).**

- Growth with human development.
- Reduction of poverty ration by 5% points by 2007 and by 15% points by 2012.

- Providing gainful & high quality employment at least to addition to the labor force over the 10th plan period.
- All children in school by 2003, all children to complete 5yrs of schooling by 2007.
- Reduction in gender gap in literacy & wage rate by at least 50% by 2007.
- Reduction in decadal rate of population growth between 2001 & 2011 to 16.2%.
- Increase in literacy rate to 75% within the plan.
- Reduction of infant mortality (IMR) to 45 per 1000 live births by 2007 and to 28 per 1000 lives by 2012.
- Reduction of maternal mortality rate (MMR) to 2 per 1000 live birth by 2007 as to 1 per 1000 live.
- Increase in forest and tree covers to 25% by 2007 and 33% by 2012.
- All villages to have sustained access to potable drinking water within the plan.
- Cleaning of all major polluted river by 2007& other by 2012.
- Doubling the per capita income in next 10 years.

#### **14) Eleventh five year plan (2007 to 2012).**

- It setup the economic growth rate at 9% but it was revised 8.1% due to economic crisis by Mr. Montek Singh Ahluwaliah.
- Increase in agricultural GDP growth rate 4% per year.
- Fast sustainable & more inclusive growth.
- Industrial growth 9.2% in 10th plan and want between 10% and 11%.
- Manufacturing 12%.58 million new work opportunities.
- Reduce educated unemployment to 5% below.
- Increase literacy rate for persons of age 7 or more to 85%.
- Reduce total fertility rate 2.1% provide clean drinking water.
- Reduce malnutrition between child 0-3 years, reduce anemia among women & girls.
- Raise sex ratio for age group 0-6 to 935 by 2011-12 & 950 by 2016.
- 33% beneficiaries of government schemes to girls & women.
- Ensure electricity connection to all village & BPL family by 2009.
- Provide telephone by Nov 2007 and broadband connectivity by 2012.
- Increase forest area by 5% points.
- Much stress on agriculture (4%).
- Promoting industrial (10-11%).
- Focus on service sector (9-11%) 15).

#### **15) Twelve five year plan (2012 to 2017).**

- Enhancing skills and faster growth & generation of employment.
- Managing the environment.
- Market for efficiency & inclusions.
- Decentralization empowerment & information.
- Securing energy future for India.
- Rural transformation and sustained growth of agriculture.
- Improved access to quality education.
- Better preventive, curative health care as government providing free treatment to pregnant women.
- Vision is of rapid, sustainable and more inclusive growth.
- Enhancing the capacity for growth- today GDP is 8% increase it to 9% or 10%, mobilization of investment resources, better allocation of resources, higher investment in infrastructure through public & PPP, efficient use of public resources.
- Enhancing skills and faster generation of employment.
- Managing the environment.
- Market for efficiency & inclusion.
- Decentralization, empowerment & information.
- Technology& innovation.
- Securing the energy future for India.
- Accelerated development of transport infrastructure.
- Rural transformation & sustained growth of agriculture.
- Managing the environment.
- Improved access to quality education.

- Better preventive & curative healthcare.
- GDP= 8%, agriculture – 4%, manufacturing- 7.1%, industrial- 7.6%, service sector- 9%.
- Every state must have a higher average growth rate in 12th plan.
- Head count ratio of consumption poverty to be reduced by 10% points over the preceding estimate.
- Generate 50 million new work opportunities in the non-farm sector & provide skill certification to equivalent.
- Mean year of schooling to increase to 7 year by end of 12th plan.
- Enhance access to higher education by creating two million additional seats for each age cohort aligned to skill needs of economy.
- Elimination of gender & social gap in school enrollment (between boys & girls, SC & ST).
- Reduced IMR to 25 per 1000 live and MMR to 1 per 1000 lives, improve sex ratio (0-6 yr.) to 950 by end of 12th plan.
- Reduced total fertility rate to 2.1 by end of 12th plan.
- Reduced under-nutrition among children age (0-3 yr. to half of NFHS-3 levels by end 12th plan.
- Increase investment in infrastructure as per of GDP to 9%.
- Increase gross irrigated area 90 million hectare to 103 million hectare.
- Provide electricity to all villages.
- Upgrade national & state highways to minimum 2 lane standard.
- Complete eastern & western dedicated freight corridors.
- Increase rural tele density to 70%.
- Ensure 50% of rural population has access to 55 LPCD piped drinking water supply & 50 % Gram Panchayat achieve the nirmal gram status.
- Increase green cover by 1 million hectare.
- Add 30000 MW of renewable energy capacity.
- Reduce emissions intensity of GDP in line with the target of 20% to 25% reduction by 2020 over 2005 levels.
- Provide access to banking services to 90% Indian houses.
- Major subsidies & welfare related beneficiary payments to be shifted to a direct cash transfer by end.

### INDIA VISION 2020

- Planning commission has released India vision 2020 on Jan 23rd 2003, progress of next 2 decades by Mr. Shyam Prasad Gupta.
- Expected annual growth rate 9% by 2020.
- Elimination of unemployment, illiteracy & poverty by 2020.
- Per capita income to get doubled by 2020.
- Cent percent registration of children (age 6 to 14) in schools.
- 1.35 billion population having better life by 2020.
- Environment situation to remain as unbalance as present.
- 20 crores new employment opportunity.
- Present employment share in agriculture came down 56% to 40%.
- Unorganized sector to create more additional employment opportunity.
- Urban population percentage to get increased from 25.5% to 40%.
- Water problem remain as it ease in metro's cities.

### List showing names of Chairman, Planning Commission

1. JAWAHARLAL LAL NEHRU MARCH, 1950 27.05.64
2. LAL BHADUR SHASHTRI JUNE, 64 JAN,66
3. SMT. INDIRA GANDHI JAN, 66 24.03.77 JAN, 80 31.10.84 D) MORARJI DESAI 25.03.77 09.08.79
4. CHARAN SINGH 10.08.79 JAN, 80
5. RAJIV GANDHI NOV,84 DEC, 89 G) V.P. SINGH 22.12.89 NOV, 90
6. CHANDRA SHEKHAR DEC, 90 24.6.91
7. P.V. NARASIMHA RAO JUNE 1991 15.05.96
8. ATAL BEHARI VAJPAYEE 16.05.96 31.05.96 K) H.D. DEVE GOWDA 01.06.96 20.04.97
9. I.K. GUJRAL 21.04.97 18.03.98
10. ATAL BIHARI VAJPAYEE 19.03.98 22.05.2004
11. DR. MANMOHAN SINGH 22.05.2004 .....

12. DR. MANMOHAN SINGH ..... 26.05.2014

### TARGETS AND ACHIEVEMENTS

- 1ST PLAN- TARGET 2.1% ACHIEVE 3.6%
- 2ND PLAN- TARGET 4.5- ACHIEVE 4.21
- 3RD PLAN- TARGET 5.6- ACHIEVE 2.72
- 4TH PLAN- TARGET 5.7- ACHIEVE 2.05
- 5TH PLAN- TARGET 4.4- ACHIEVE 4.83
- 6TH PLAN- TARGET 5.2- ACHIEVE 5.54
- 7TH PLAN- TARGET 5.5. ACHIEVE 54
- 8TH PLAN- TARGET 5.6- ACHIEVE 6.68
- 9TH PLAN- TARGET 6.5- ACHIEVE 5.55
- 10TH PLAN- TARGET 8- ACHIEVE 7.7
- 11TH PLAN- TARGET 9 THEN REVISED 8.1 ACHIEVED 6.3%
- 12TH PLAN- TARGET 8.2-

### NITI Aayog

Government of India has replaced the old planning commission started in 1950 with a new institution called NITI Aayog on 1 January 2015. It works under the chairmanship of Prime Minister. NITI Aayog (National Institution for Transforming India) will seek to provide a critical directional and strategic input into the development process. It focuses on co-operative federalism.

### What's new with NITI Aayog?

The centre-to-state one-way flow of policy, that was the hallmark of the Planning Commission era, is now sought to be replaced by a genuine and continuing partnership of states.

- NITI Aayog = more a “think tank” than a finance distributing agency.
- NITI Aayog will provide Governments at the central and state levels with relevant strategic and technical advice across the spectrum of key elements of the policy.
- With NITI Aayog, there will be multi-directional flow of policy (from Center to States, from States to Center, between ministries etc.)
- Better inter-ministry coordination.
- The NITI Aayog will develop mechanisms to formulate credible plans to the village level and aggregate these progressively at higher levels of government.
- The NITI Aayog will create a knowledge, innovation and entrepreneurial support system through a collaborative community of national and international experts.

## Objectives of #NITIaayog

fostering COOPERATIVE FEDERALISM,  
active involvement of states

formulation of plans at VILLAGE-level,  
aggregation at higher levels

SPECIAL ATTENTION to sections at risk of not  
benefiting adequately from economic progress

economic policy that incorporates  
NATIONAL SECURITY INTERESTS

feedback for constant  
INNOVATIVE IMPROVEMENTS

partnerships with national and  
international THINK TANKS

creating a KNOWLEDGE, INNOVATION  
& ENTREPRENEURIAL support system

platform for RESOLUTION of inter-sectoral  
& inter-departmental issues

state-of-the-art resource center for  
RESEARCH on good governance

focus on TECHNOLOGY upgradation  
and CAPACITY BUILDING

Source: PIB.NIC.IN

- ❖ The National institution for Transforming India will act as a catalyst for the development by a holistic approach.
- ❖ NITI Aayog is based on the 7 pillars of effective governance – (1) Pro-People (2) Pro-Activity (3) Participation (4) Empowering (5) Inclusion of all (6) Equality (7) Transparency.
- ❖ In NITI Aayog, the state governments have an equal role in nation's development process and NITI Aayog promises the principle of co-operative federalism.
- ❖ NITI Aayog is planned as a think tank institution which stands not only as a hub for knowledge but also for good governance.

- ❖ It's a platform for monitoring and implementation of all government policies by bringing together various ministries at the center and state level.
- ❖ Priorities include upliftment of the poor, marginalized and downtrodden.
- ❖ Empower vulnerable and marginalized sections, redressing identity-based inequalities of all kinds – gender, region, religion, caste or class.

### NITI Aayog: Objectives and Opportunities

**NITI Aayog will aim to accomplish the following objectives and opportunities:**

- ❖ An administration paradigm in which the Government is an “enabler” rather than a “provider of first and last resort.”
- ❖ Progress from “food security” to focus on a mix of agricultural production, as well as actual returns that farmers get from their produce.
- ❖ Ensure that India is an active player in the debates and deliberations on the global commons.
- ❖ Ensure that the economically vibrant middle-class remains engaged, and its potential is fully realized.
- ❖ Leverage India’s pool of entrepreneurial, scientific and intellectual human capital.
- ❖ Incorporate the significant geo-economic and geo-political strength of the Non-Resident Indian Community.
- ❖ Use urbanization as an opportunity to create a wholesome and secure habitat through the use of modern technology.
- ❖ Use technology to reduce opacity and potential for misadventures in governance.

### NITI Aayog: Aims

The NITI Aayog aims to enable India to better face complex challenges, through the following:

- ❖ Leveraging of India’s demographic dividend, and realization of the potential of youth, men and women, through education, skill development, elimination of gender bias, and employment
- ❖ Elimination of poverty, and the chance for every Indian to live a life of dignity and self-respect
- ❖ Redressal of inequalities based on gender bias, caste and economic disparities
- ❖ Integrate villages institutionally into the development process
- ❖ Policy support to more than 50 million small businesses, which are a major source of employment creation
- ❖ Safeguarding of our environmental and ecological assets

## Composition of #NITIaayog

### Chairperson

- Prime Minister

### Governing Council

- CMs (States) and Lt Governors (UTs)

### Regional Councils

- Formed on need-basis, comprising CMs and Lt Govs of the region

### Members

- Full-time basis

### Part-time Members

- Max 2, rotational, from relevant institutions

### Ex-officio Members

- Max 4 from Council of Ministers, nominated by PM

### Special Invitees

- Experts, specialists, practitioners with domain knowledge

### Chief Executive Officer

- Appointed by PM for fixed tenure, Secy rank

### Secretariat

- As deemed necessary

Source: PIB.NIC.IN

**Will comprise of, in addition to the Prime Minister as the Chairperson:**

1. Vice-Chairperson: to be appointed by the Prime Minister.
2. Members: full-time: specialists with international exposure.
3. Part-time Members: maximum of 2, from leading universities, research organizations and other relevant institutions in an ex-officio capacity. Part-time members will be on a rotational basis.
4. Ex-Officio Members: maximum of 4 members of the Union Council of Ministers to be nominated by the Prime Minister.
5. Chief Executive Officer: to be appointed by the Prime Minister for a fixed tenure, in the rank of Secretary to the Government of India.
6. Secretariat: as deemed necessary.

**Difference between NITI Aayog and Planning Commission**

**Organization:**

- ❖ Planning Commission – Had deputy chairperson, a member secretary, and full-time members. Secretaries or member secretaries appointed by the usual process.
- ❖ NITI Aayog – New posts of CEO of secretary rank, and Vice-Chairperson. Will also have five full-time members and two part-time members. Four cabinet ministers will serve as ex-officio members. CEO is appointed directly by Prime Minister.

**Planning:**

- ❖ Planning commission goes for top-down planning for government with public sector resources.
- ❖ NITI ayog formulate national development strategy in a market economy integrated with the globalized world.

**Relation with states**

- ❖ The planning commission was a central government institution and no representation of state government. There was no structural mechanism for interaction with states.
- ❖ NITI ayog provides a partnership with state governments to promote co-operative federalism. It provides a platform for structured and regular interaction with states.

**Finance**

- ❖ The role of Finance Commission was greatly reduced with the formation of Planning Commission. Allocation of funds were decided by the Planning Commission.
- ❖ NITI ayog don't any role in fund allocation. Finance ministry to decide the share of taxes to states, fund allocation to CSS and Union assistance to the state plan.

**Constitution and Reporting**

- ❖ Planning Commission- The commission reported to National Development Council that had State Chief Ministers and Lieutenant governors.
- ❖ Niti Aayog – Governing Council has State Chief Ministers and Lieutenant Governors.

# UNIT-4

# PUBLIC FINANCE

### **Meaning and Definition of Public Finance:**

Public finance is a study of income and expenditure or receipt and payment of government. It deals the income raised through revenue and expenditure spent on the activities of the community and the terms 'finance' is money resource i.e. coins. But public is collected name for individual within an administrative territory and finance. On the other hand, it refers to income and expenditure. Thus public finance in this manner can be said the science of the income and expenditure of the government.

Different economists have defined public finance differently. Some of the definitions are given below.

**According to prof. Dalton** "public finance is one of those subjects that lie on the border lie between economics and politics. It is concerned with income and expenditure of public authorities and with the mutual adjustment of one another. The principal of public finance are the general principles, which may be laid down with regard to these matters.

To sum up, public finance is the subject, which studies the income and expenditure of the government. In simpler manner, public finance embodies the study of collection of revenue and expenditure in the public interest for the welfare of the country

### **Nature of Public Finance**

Nature of Public finance implies whether it is a science or art or both.

**1. Public Finance is a Science:** Science is a systematic study of any subject which studies causal relationship between facts. Public finance is a systematically study relating to revenue and expenditure of the government. It also studies the causal relationship between facts relating to revenue and expenditure of the government. Prot.

Plehn has advanced the following arguments in favour of public finance being science:

- i. Public finance is not a complete knowledge about human rather it is concerned with definite and limited field of human knowledge.
- ii. Public finance is a systematic study of the facts and principles relating to government revenue and expenditure.
- iii. Scientific methods are used to study public finance.
- iv. Principles of public finance are empirical.

### **Science is of two types:**

- a) Positive science and
- b) Normative science.

In positive science one knows about factual situation or facts as they are. It describes "what is". As against it, normative science presents norms or ideals. It describes "what ought to be" or what is right or wrong i.e. value judgement. By the study of public finance one gets factual information about the problems of government's revenue and expenditure. Public finance is therefore, a positive science. Study of public finance also reveals what should be the quantum of taxes. Which taxes, direct or indirect, should be imposed. On what items more or on what items less of public expenditure be incurred. Public finance is therefore a normative

science. Thus, study of public finance offers suggestions regarding revenue and expenditure of the government as also apprises of their factual position.

**2. Public Finance is an Art:** In the words of J.N. Keynes, "Art is the application of knowledge for achieving definite objectives." Fiscal policy which is an important instrument of public finance makes use of the knowledge of the government's revenue and expenditure to achieve the objectives of full employment, economic equality, economic development and price stability, etc. To achieve the objective of economic equality taxes are levied at progressive rate. Since every tax is likely to be opposed, it becomes essential to plan their timing and volume. The process of levying tax is certainly an art. Budget making is an art in itself. Study of public finance is helpful in solving many practical problems. Public finance is therefore an art also.

In sort, public finance is both science and art. It is a positive science as well as normative science.

#### Scope of Public Finance:

The scope of public finance may be summarized as under:

1. Public Revenue
2. Public Expenditure
3. Public Debt
4. Financial Administration
5. Economic Stabilization

**1. Public Revenue:** Public revenue concentrates on the methods of raising public revenue, the principles of taxation and its problems. In other words, all kinds of income from taxes and receipts from public deposit are included in public revenue. It also includes the methods of raising funds. It further studies the classification of various resources of public revenue into taxes, fees and assessment etc.

**2. Public Expenditure:** In this part of public finance we study the principles and problems relating to the expenditure of public funds. This part studies the fundamental principles that govern the flow of Government funds into various streams.

**3. Public Debt:** In this section of public finance, we study the problem of raising loans. Public authority or any Government can raise income through loans to meet the short-fall in its traditional income. The loan raised by the government in a particular year is the part of receipts of the public authority.

**4. Financial Administration:** Now comes the problem of organisation and administration of the financial mechanism of the Government. In other words, under financial or fiscal administration, we are concerned with the Government machinery which is responsible for performing various functions of the state.

**5. Economic Stabilization:** Now -a-day's economic stabilization and growth are the two aspects of the Government economic policy which got a significant place in the discussion on public finance theory. This part describes the various economic polices and other measures of the government to bring about economic stability in the country.

From the above discussion, we can say that the subject-matter of public finance is not static, but dynamic which is continuously widening with the change in the concept of state and functions of the state. As the economic and social responsibilities of the state are increasing day by day, the methods and techniques of raising public income, public expenditure and public borrowings are also changing. In view of the changed circumstances, it has given more responsibilities in the social and economic field.

#### Role of Government in Economic Systems

The shortcomings of the free market mechanism under which there is no role of government in the economic development of a nation.

Due to the failure of the free market mechanism, the intervention of government became indispensable for the growth of an economy.

Now, the question arises of determining the extent of government in regulating and managing economic activities.

This remains a debatable issue among various economists. This is because of the reason that the government intervention is also not able to eradicate the economic problems of a nation completely.

Different economists have given different viewpoints for the role of government in an economy.

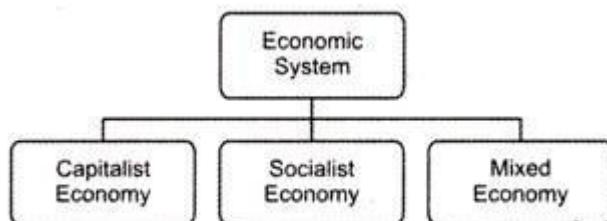
Following are some of the viewpoints given by different economists:

**According to Colin Clark**, "The role of government must be held at a ceiling of 25 per cent of the national income."

**According to Samuelson**, "There are no rules concerning the proper role of government that can be established by a priori reasoning."

From the aforementioned viewpoints, it can be concluded that the accurate and exact percent or amount of government intervention in an economy is hard to decide and calls for an issue of collective social choice. The extent of role of government differs in different economies. An economic system is a way through which economic resources are owned and distributed.

On the basis of the ownership and distribution of resources, the economic system can be grouped into three categories, which are shown in Figure-1



**Figure-1: Different Types of Economic System**

Let us learn about the different types of an economic system (as shown in Figure-1).

#### **Capitalist Economy:**

A capitalist economy refers to an economy that works on the principle of the free market mechanism. It is also termed as laissez faire system. In a capitalist economy, the role of government is very limited. The main functions of government, as given by Adam Smith, are to maintain law and order in a country, make national defense stronger, and regulate money supply. According to Smith, the market system administers various economic functions. However, over a period of time, the functions of government in an economy have increased.

**In a capitalist economy, the main responsibilities performed by the government are as follows:**

- Developing and sustaining the free market mechanism system
- Eliminating any kind of restrictions on the working of free competitive market
- Increasing the effectiveness of free competitive market system through various measures

In the view of Meade, following are the responsibilities of a government in a capitalist economy:

- Regulating and controlling various economic situations, such as inflation and deflation, by formulating and implementing various fiscal and monetary measures

- b. Controlling the power of monopolistic and large corporations to elude various economic problems, such as unemployment and inequitable distribution of resources
- c. Possessing the ownership of public utilities, such as railways, education, medical care, water, and electricity, which are required by an economy as a whole
- d. Prohibiting discrimination among individuals and providing them equal educational and job opportunities
- e. Limiting restrictive trade practices and power of trade unions
- f. Maintaining law and order, administering justice, and safeguarding the freedom of individuals in an economy
- g. Supporting private ventures in an economy
- h. Creating central planning body that helps in the development of an economy on a larger scale
- i. Handling problems to environment, extinction of natural resources, and growth of population

Therefore, we can conclude that the major role of government in a capitalist economy is to control and encourage the free market mechanism. In addition, the government should encourage private ventures for safeguarding the future of an economy.

### **Socialist Economy:**

In a socialist economy, the function of government is entirely different from the function of government in a capitalist economy. In a capitalist economy, the government acts as a regulatory and complementary body. On the other hand, in a socialist economy, the government plays a comprehensive role in almost all economic activities, such as production, distribution, and consumption, of a nation. In a socialist economy, not only the ownership of private property is allowed to a limited amount, but the concept of free market mechanism is also eliminated.

The private ownership of resources, in a socialist economy, is changed by state ownership. In addition, in a socialist economy, the government plans and regulates all the economic activities centrally at a state level. Moreover, the decisions related to production, allocation of resources, employment, pricing, and consumption, are completely dependent on the government or its central planning authority. In a socialist economy, individual's decisions are totally dependent on the limit decided by the government.

For example, individuals are given the freedom of choice, but it is subject to the limitations of policy framework of the socialist economy. The countries in which socialist economy is adopted are China, Yugoslavia, Czechoslovakia, and Poland. The objective of the government in a socialist economy is same as in the capitalist economy, such as growth, efficiency, and maintaining justice. However, the ways adopted by the socialist economy to achieve those objectives are different from the capitalist economy.

For example, in the capitalist economy, the main force of motivation is the private profit, whereas in the social economy, the encouraging factor is the social welfare. The socialist way of managing an economy facilitates the elimination of various evil activities of the capitalist economy, such as labor exploitation, unemployment, and inequality in the society. This is only the classical view of the socialist economy.

However, over a passage of time, the scope of socialist economy has also been reduced due to various reasons, such as prohibition of profits from private ventures, inadequate utilization of resources, and restrictions on economic development as noted by Union of Soviet Socialist Republics (USSR).

### **Mixed Economy:**

Mixed economy refers to an economy that-comprises the features of both, the socialist economy and capitalist economy. This implies that working of a mixed economy is based on the principles of the free market mechanism and centrally planned economic system.

In a mixed economy, the private sector is encouraged to work on the principle of the free market mechanism under a political and economic policy outline decided by the government. On the other hand, the public

sector, in a mixed economy, is involved in the growth and development of public utilities, which is based on the principle of socialist economy.

In a mixed economy the public sector comprises certain industries, businesses, and activities that are completely owned, managed, and operated by the government. Moreover, in a mixed economy, certain laws have been enacted by the government to restrict the entry of private entrepreneurs in industries reserved for the public sector.

Apart from this, the government also strives hard for the expansion of the public sector by nationalizing various private ventures. For example, in India, the government has nationalized several private banks, which has resulted in the expansion of the public sector. Besides working for the growth and development of the public sector, the government, in a mixed economy, controls the activities of the private sector by implementing various monetary and fiscal policies.

It should be noted here that the free market mechanism is actually a form of a mixed economy. This is because of the reason that in free market mechanism, both the private and public sectors exist simultaneously. However, public sector in a free market mechanism economy is different from the public sector of the mixed economy.

In free market mechanism economy, the public sector is responsible to maintain law and order in a country, make national defense stronger, and regulate money supply. On the other hand the public sector of a mixed economy is involved almost all economic activities, such as production, distribution, and consumption. For example, the public sector of an economy, such as India, is based on the socialist pattern of society.

### **Types of goods**

**Normal goods** - the quantity demanded of such commodities increases as the consumer's income increases and decreases as the consumer's income decreases. Such goods are called normal goods.

**Giffen goods** - a Giffen good is an inferior good which people consume more of as price rises, violating the law of demand.. In the Giffen good situation, cheaper close substitutes are not available. Because of the lack of substitutes, the income effect dominates, leading people to buy more of the good, even as its price rises.

**Substitutes goods**- substitute good for another kind insofar as the two kinds of goods can be consumed or used in place of one another in at least some of their possible usesn increase in price for one kind of good (*ceteris paribus*) will result in an increase in demand for its substitute goods, and a decrease in price (*ceteris paribus*, again) will result in a decrease in demand for its substitutes.

**Complementary goods** - A complementary good or complement good in economics is a good which is consumed with another good;if goods A and B were complements, more of good A being bought would result in more of good B also being bought and vice versa eg car and Petrol. If the demand for car increases then the demand for petrol also increases.

### **Private Goods**

Private goods are goods and services supplied and sold through markets by private sector businesses

#### **Private goods**

A private good or service has three main characteristics:

**Excludable:** A ticket to the theatre or a meal in a restaurant or pay-per-view sporting events are private goods because buyers can be excluded from enjoying the product if they are not willing and able to pay for it. Excludability gives the seller the chance to make a profit. When goods are excludable, the owners can exercise property rights.

**Rival in consumption:** If you order and enjoy a pizza from Dominos, that pizza is no longer available to someone else. Likewise driving your car on a road uses up road space that is no longer available at that time to another motorist. With a private good, one person's consumption of a product reduces the amount left for others to consume and benefit from - because scarce resources are used up in supplying the good or service.

**Rejectable:** If you don't like the soup on the school menu, you can use your money to buy something else! You can choose not to travel on Virgin Rail and go instead by coach, or you can choose not to buy a season ticket for your local soccer club and instead use the money to finance a subscription to a health club. All private goods and services can be rejected by the consumer if their needs and preferences or their budget changes.

### Definition of Public Good

#### A public good has two characteristics:

Non-rivalry: This means that when a good is consumed, it doesn't reduce the amount available for others.

- E.g. benefiting from a street light doesn't reduce the light available for others but eating an apple would.

Non-excludability: This occurs when it is not possible to provide a good without it being possible for others to enjoy. For example, if you erect a dam to stop flooding – you protect everyone in the area (whether they contributed to flooding defenses or not).

A public good is often (though not always) under-provided in a free market because its characteristics of non-rivalry and non-excludability mean there is an incentive not to pay. In a free market, firms may not provide the good as they have difficulty charging people for their use.

### What are merit goods?

Merit goods are those goods and services that the government feels that people will under-consume, and which ought to be subsidised or provided free at the point of use so that consumption does not depend primarily on the ability to pay for the good or service.

Merit goods and services create positive externalities when consumed and these 3rd party spill over benefits can have a significant effect on social welfare. Market failure occurs when merit goods and services are under-consumed under free market conditions.

Policy intervention can help either through offering financial incentives (e.g. consumer or producer subsidies) or through behavioural nudges and information campaigns designed to change our choices.

### What are the key differences between a merit good and a public good?

## Comparing Merit Goods and Public Goods

Merit Goods	Public Goods
• Provided by both public & private sector	• Normally funded and provided by the government
• Positive marginal cost of supplying to extra users	• Collective consumption – provide to one and you provide to all
• Limited in supply – potentially high opportunity cost	• Largely unconstrained in supply
• Rival – consumption by one reduces availability to others	• Non-rival in consumption
• Excludable e.g. private health care and education	• Non-excludable – giving rise to the free rider problem
• Rejectable by those unwilling to pay for the good or service	• Non-rejectable – usually funded by general taxes

### Meaning and Need for Budget:

A budget is a blueprint of plan of action to be followed during a specified period of time for the purpose of attaining a given objective.

According to CIMA Terminology, budget is “a plan quantified in monetary terms prepared and approved prior to a defined period of time, usually showing planned income to be generated and/or expenditure to be incurred during that period and the capital to be employed to attain a given objective”.

### Features:

An analysis of the above definition reveals the following essential features of a budget:

- (i) It is prepared beforehand based on a future plan of actions;
- (ii) It is related to a definite future period and is based on the objectives to be attained;
- (iii) It is expressed in financial terms;
- (iv) It shows planned income to be generated;
- (v) It shows probable expenditure to be incurred;
- (vi) It indicates the capital to be employed during the period;

Thus, a budget sets the firm's goals in clear formal terms to avoid confusion and provides a detailed plan of action for achieving the goals. It is a means of communication by which the top management uses the budget as a vehicle to communicate their ideas to the subordinates who are to give them the practical shape.

It coordinates the various activities (such as sales, production, purchases etc.) of the organisation in such a way that the use of resources is maximised. It also provides a means of measuring and controlling the performance of the organisation, and supplies information to the management, on basis of which necessary corrective actions may be taken.

### Types:

### I. Functional Budgets:

A functional budget is a budget which relates to the individual functions of the organisation like sales, production, purchase, capital expenditure etc. For each function there is usually a separate budget which is controlled by the functional manager.

Normally, the various functional budgets which are drawn up in an organisation are:

#### 1. Sales Budget:

This budget is a forecast of quantities and values of sales to be achieved in a budget period. Generally, sales budget is the starting point for the preparation of the functional budgets. This budget can be prepared on the basis of products, sales areas or territories, salesmen or agent wise, types of customers etc.

A sales budget may be prepared with the help of any one or more of the following methods:

##### (i) Analysis of Past Sales:

The past sales are analysed to find out as to what changes are likely to happen in future. However, in addition to past sales, the sales manager must consider other factors affecting future sales e.g., seasonal fluctuations, growth of market, trade cycle etc. Statistical method may be used for projecting sales.

##### (ii) Market Analysis:

The purpose of market analysis is to ascertain the potential market demand for a product, product design required by customers, fashion, trends, purchasing power of people, activities of competitors and the prices that consumers are likely to pay.

##### (iii) Reports of Salesmen:

Salesmen—who are men in close touch with the market—may be asked to submit a report to the sales manager as to expected sales, customers' tastes and preferences, possible competition etc.

##### (iv) General Trade Prospects:

The probability of the sales going up or down depends on the general trade prospects. A change in political or economic conditions is bound to influence the volume of sales. In this connection valuable information may be known from financial papers and magazines, national and international economic statistics, international relations, political influences, government policies etc.

##### (v) Business Conditions:

Changes in the policies and methods of business should also be considered. For example, introduction of new product or new design, additional spending on advertising, improved deliveries, after-sales services etc. have some market effect on a sales forecast which should be considered with reasonable degree of accuracy.

##### (vi) Special Conditions:

Sometimes, certain special conditions outside the business may influence its sales. For example, development of particular area may lead to demand for cars, scooters, cycles or electrification of a village may have an effect on sale of radio, television etc.

#### 2. Selling and Distribution Cost Budget:

This budget is a forecast of the expenses connected with the selling and distributing the product of a concern during the budget period. This budget is closely connected with the sales budget. While preparing this budget, a classification is made according to the variability of cost. This budget is prepared by the sales managers.

#### 3. Production Budget:

After preparing the sales budget, the production budget is prepared. This budget is prepared in physical units. It shows the number of units of each product that must be produced to satisfy the sales forecasts and to achieve the desired level of inventory.

Thus, production budget is the sales budget adjusted for inventory changes as:

Units to be produced = Budgeted Sales + Desired closing inventory – Opening inventory.

While preparing a production budget, the factors like sales forecast, budgeted stock requirements, plant capacity, policy of management regarding purchase of components etc. are taken into account. It is very necessary to coordinate production with sales budget to avoid imbalance in production.

#### **4. Production Cost Budget:**

Production cost budget shows in detail the estimated cost of carrying out the production plan and programmes set out in the production budget. This budget summarizes material cost, labour cost and factory overhead for production. Factory overheads are usually further subdivided into fixed, variable and semi-variable. Cost are analysed by departments and/or products.

#### **5. Material Budget:**

A Material Budget shows the estimated quantity as well as the cost of each type of direct material and component required for producing goods as per production budget. There are two stages of preparing material budget. At the first stage, the quantities of different types of direct material are estimated.

Afterwards the price of each kind of direct material and component is used to obtain the cost of different types of materials and components consumed. It is necessary to know unit material utilisation rate for preparing material budget. The unit material utilisation rate is multiplied by the number of units to be produced in order to determine the total units of material required for estimated production.

#### **6. Purchase Budget:**

Purchase Budget gives the details of the purchases which must be made during the budget period. It includes all items of purchase, such as, raw materials, indirect material and other equipment.

The purchase budget for raw materials is the most important and the following factors are required to be considered in preparing this budget:

- (i) Production or delivery target,
- (ii) Quantity and quality of each material needed,
- (iii) Present stock position,
- (iv) The dates on which different quantities of materials are required,
- (v) Safety stock,
- (vi) Orders already placed,
- (vii) Sources of supply,
- (viii) Storage space available,
- (ix) Economic order quantity,
- (x) Price to be paid,
- (xi) Finance available,
- (xii) Seasonal discounts,

- (xiii) Transport and receiving arrangement,
- (xiv) Management policy etc.

### **7. Labour Budget:**

This budget contains the estimates relating to number of employees and types of employees required for the budgeted output. Once the classification of labour into its different grades has carried out, the labour requirements for each type of product can be estimated.

The standard labour hours required for each type of product are then set with the help of time and motion study. From the total man-hours required for production, labour requirements are determined and, from the estimated rate per hour, labour cost per unit is determined.

### **8. Factory Overhead Budget:**

Factory overhead budget gives an estimates of all fixed, variable and semi-variable items of factory overhead to be incurred during the budget period to achieve the production budget.

### **9. Plant Utilization Budget:**

This budget indicates plant and machinery facility required to meet the budgeted production during the budget period. Plant capacities/facilities will be expressed in the budget in terms of convenient units such as working hours or weight or the number of products etc. While preparing this budget allowance must be made for the time lost in repairs and maintenance, setting-up time etc.

**The main purposes of plant utilization budget are:**

- (i) To determine the load on each process, cost centre or groups of machines for the budget period.
- (ii) To indicated the processes or cost centres which are overloaded so that corrective action may be taken such as shift working, overtime working, sub-contracting, purchase of new machinery etc.
- (iii) To indicate the processes or cost centres which are under-loaded—so as to make effort to increase the sales volume to utilise the surplus capacity.

### **10. Administration Cost Budget:**

This budget represents the estimated cost of formulating policy, directing the organisation and controlling the business operations. Since most of the administration cost is fixed in nature, the preparation of this budgets does not present much difficulty. The main budget is divided into separate budget covering separate administrative activities such as legal, finance, accounting, management information services, internal audit and taxation.

### **11. Research and Development Cost Budget:**

This budget provides an estimates of the expenditure to be incurred on research and development during the budget period. The expenditure of research depends on the nature of the concern's product, economic condition, extent of competition, technological development in related industry, and the policy of the management. Generally, a total allowed expenditure provides a base for preparation of this budget.

### **12. Capital Expenditure Budget:**

This budget gives an estimate of the amount of capital that may be needed for acquiring fixed assets required for achieving the production targets as laid down in the production budget. This budget is based on the requisitions for capital expenditure from various departments and after considering their profitability, capital expenditure is sanctioned and incorporated in the budget.

### **13. Cash Budget:**

A cash budget is a statement of estimated sources and uses of cash. It compares the estimated cash receipts and cash disbursements of the concern during the budget period and shows the resultant periodical cash position as the budget period develops. This budget is prepared after all the functional budgets are prepared.

#### **The cash budget serves the following purposes:**

- (i) It ensures that sufficient cash is available when required for revenue and capital expenditure.
- (ii) It shows how much cash can be internally generated to finance capital expenditure.
- (iii) It reveals when a shortage of cash is most likely to occur, so that action may be taken in time e.g., bank overdraft or loan from some other sources may be arranged.
- (iv) It indicates the availability of cash for taking advantages of discounts offered.
- (v) It shows the availability of excess funds for short or long-term investments.

A cash budget is prepared by any of the following methods:

#### **1. Receipts and Payments Method:**

Under this method, all cash receipts and payments which are expected during the budget period should be considered. Cash requirements of all functional budgets are also taken into account. However, cash adjustments and accruals are not shown in the cash budget.

All anticipated cash receipts are added to the opening balance of cash and the expected cash payments are deducted to arrive at the closing balance of cash.

#### **2. Adjusted Profit and Loss Method:**

This method represents cash budget in the form of cash flow statement. The starting point in this method is the budgeted profit reflected in the income statement.

The budgeted profit is adjusted by adding back depreciation, provisions, capital receipts, decrease in current assets like debtors, stock, increase in current liabilities like creditors, and by deducting dividends, capital payments, increase in current assets like debtors, stock and decrease in current liabilities like creditors. The adjusted profit will then represent the estimated cash available.

#### **3. Balance Sheet Method:**

Under this method, the budgeted balance sheet for the period is prepared showing closing balances of all balance sheet items except cash and bank balances. The two sides of the balance sheet are then balanced and the balancing figure represents cash/bank balance or overdraft—depending upon whether the liabilities side or assets side is heavier.

### **II. Master Budget:**

Master budget is a summary of all the functional budgets and shows the overall budget plan.

According to CIMA terminology:

"A master budget is the summary budget incorporating its component as functional budgets and which is finally approved, adopted and employed." This budget commonly summarizes functional budgets to produce a budgeted Profit and Loss Account and a budgeted Balance Sheet at the end of the budget period.

### **III. Fixed Budget (Static Budget):**

A fixed budget is defined as a budget which is designed to remain unchanged irrespective of the volume of output or turnover attained. The budget remains fixed over a given period and does not change with the change in the volume of production or level of activity attained.

Thus, it does not provide for any change in expenditure arising out of changes in the level of activity or capacity. A fixed budget will, therefore, be useful only when the actual level of activity corresponds to the budgeted level of activity. But if the level of output actually achieved differs considerably from that budgeted, large variances will arise and the budgetary control becomes ineffective and meaningless.

#### **IV. Flexible Budget:**

A flexible budget is a budget which is designed to change in accordance with the level of activity actually attained.

#### **According to the ICMA Terminology:**

"Flexible budget is a budget which, by recognising the difference in behaviour between fixed and variable costs in relation to fluctuations in output, turnover, or other variable factors such as number of employees, is designed to change appropriately with such fluctuations."

Thus, a flexible budget distinguishes between fixed and variable costs and adopts itself to any level of activity. This budget also involves the construction of a series of fixed budgets for different levels of activity. The budget allowance given under this system serves as a standard of what costs should be at each level of activity.

Hence budgeted cost at actual activity is compared with actual cost at actual activity i.e., two things to a like base. It helps both in profit planning and controlling cost.

#### **Need for Flexible Budgeting:**

The need for flexible budgeting may arise in the following cases:

- (i) Where level of activity during the year varies from period to period due to the seasonal nature of the industry.
- (ii) Where the business is a new one or introduces new products and it is difficult to foresee the demand.
- (iii) Where the level of activity depends upon the availability of a factor of production such as materials, labour, plant capacity etc. which is short in supply.
- (iv) Where an industry is influenced by changes in fashion.
- (v) Where there are general changes in sales.

#### **Uses of Flexible Budgeting:**

The uses of preparing a flexible budget are:

- (i) Costs can be ascertained with greater degree of accuracy and under /over-recovery of the overheads can be successfully minimised.
- (ii) It helps management to control costs more effectively because the total costs at different levels of operation are determined already.
- (iii) It helps to implement the technique of management by exception.
- (iv) It enables management to keep an eye on the total performance of the organisation ranging from production to sales and from cost to profit.
- (v) It also helps the management to adjust the production level, the cost structure and the price level as may be the case.
- (vi) It makes the performance evaluation possible since in the event of change in the level of activity the budget can be suitable modified.

(vii) Since costs are classified in accordance to their variability, the introduction of marginal costing technique is facilitated to a great extent. As a result, a firm can avail of the benefit of taking strategic decisions like make or buy, fixation of selling price, utilisation of spare capacity etc..

### **What is zero-based budgeting?**

As the name says “Zero-based budgeting” is an approach to plan and prepare the budget from the scratch. Zero-based budgeting starts from zero, rather than a traditional budget that is based on previous budgets.

With this budgeting approach, you need to justify each and every expense before adding it to the actual budget. The primary objective of zero-based budgeting is the reduction of unnecessary cost by looking at where costs can be cut.

To create a zero base budget involvement of the employees is required. You can ask your employees what kind of expenses the business will have to bear and figure out where you can control such expenses. If a particular expense fails to benefit the business, the same should be axed from the budget.

### **Differences between Traditional Budgeting and Zero Base Budgeting**

In traditional Budgeting, the previous year's budget is taken as a base for the preparation of a budget. Whereas, each time the budget under zero-based budgeting is created, the activities are re-evaluated and thus started from scratch.

The emphasis of the traditional budgeting is on the previous expenditure level. On the contrary, zero-based budgeting focuses on forming a new economic proposal, whenever the budget is set.

Traditional Budgeting works on cost accounting principle, thereby, it is more accounting oriented. Whereas the zero-based budgeting is decision oriented.

In the traditional budgeting, justification of the line items and expenses are not at all required. On the other hand, in zero-based budgeting, proper justification is required, taking into account the cost and benefit.

In traditional budgeting, the top management take decisions regarding any amount that will be spent on a particular product. In contrast, in zero-based budgeting, the decision regarding the spending a specific sum on a particular product is on the managers.

Zero-based budgeting is better than traditional budgeting when it comes to clarity and responsiveness.

Traditional budgeting follows a monotonous approach. On the contrary, zero-based budgeting follows a straightforward approach.

### **What are the steps to create a Zero based budget?**

Identifying the decision units that need a justification for every line item of expenditure in the proposed budget.

Preparing Decision Packages\*. Each decision package is an identifiable and separate activity. These decision packages are connected with the objectives of the company.

The next step in ZBB is to rank the decision packages. This ranking is done on the basis of cost-benefit analysis.

Finally, funds are allocated on the basis of the above findings by following a pyramid ranking system to ensure maximum results.

\*Decision packages mean self-contained proposals or module seeking funds. Each decision package comprises the explanation of the activity, the amount involved, the need for the item, the benefit arising from the implementation of the proposal, the expected loss that may be incurred if it is not done and much more..

### **Zero Based Budgeting Advantages**

**Efficiency:** Zero-based Budgeting helps a business in the allocation of resources efficiently (department-wise) as it does not look at the previous budget numbers, instead looks at the actual numbers.

**Accuracy:** Against the traditional budgeting method that involves mere some arbitrary changes to the earlier budget, this budgeting approach makes all departments relook every item of the cash flow and compute their operation costs. This methodology helps in cost reduction to a certain extent as it gives a true picture of costs against the desired performance.

**Budget inflation:** As mentioned above every expense is to be justified. Zero-based budget compensates the weakness of incremental budgeting of budget inflation.

**Coordination and Communication:** Zero-based budgeting provides better coordination and communication within the department and motivation to employees by involving them in decision-making.

**Reduction in redundant activities:** This approach leads to identify optimum opportunities and more cost-efficient ways of doing things by eliminating all the redundant or unproductive activities.

Although this concept is a lucrative method of budgeting, it is also important to know the disadvantages as listed below:

#### **Zero Based Budgeting Disadvantages**

**High Manpower Turnover:** The foundation of zero-based budgeting itself is a zero. Budget under this concept is planned and prepared from the scratch and require the involvement of a large number of employees. Many departments may not have adequate human resource and time for the same.

**Time-Consuming:** This Zero-based budgeting approach is a highly time-intensive for a company to do annually as against incremental budgeting approach, which is a far easier method.

**Lack of Expertise:** Providing an explanation for every line item and every cost is a problematic task and requires training for the managers.

#### **Definition of 'Budgetary Deficit'**

**Definition:** Budgetary deficit is the difference between all receipts and expenses in both revenue and capital account of the government.

**Description:** Budgetary deficit is the sum of revenue account deficit and capital account deficit. If revenue expenses of the government exceed revenue receipts, it results in revenue account deficit. Similarly, if the capital disbursements of the government exceed capital receipts, it leads to capital account deficit. Budgetary deficit is usually expressed as a percentage of GDP.

#### **Types of Budgetary Deficit ↓**

The different types of budgetary deficit are explained in following points :-

##### **1. Revenue Deficit**

Revenue Deficit takes place when the revenue expenditure is more than revenue receipts. The revenue receipts come from direct & indirect taxes and also by way of non-tax revenue.

The revenue expenditure takes place on account of administrative expenses, interest payment, defence expenditure & subsidies.

Table below indicate revenue deficit of the central government of India.

### *Revenue Deficit - Central Government of India*

Year	Rs. Crore	% of GDP
1990-91	18,562	3.3
2005-06	94,644	2.7

From the above table it is clear that revenue deficit was Rs. 18,562 crores in 1990-91 and Rs. 94,644 crores in 2005-06. As proportion of GDP, revenue deficit increased from 1.5% in 1980-81 to 3.3% in 1990-91 and declined to 2.7% in 2005-06. The decline is due to the passing of the Fiscal Responsibility and Budget Management Act in 2002.

#### **2. Budgetary Deficit**

Budgetary Deficit is the difference between all receipts and expenditure of the government, both revenue and capital. This difference is met by the net addition of the treasury bills issued by the RBI and drawing down of cash balances kept with the RBI. The budgetary deficit was called deficit financing by the government of India. This deficit adds to money supply in the economy and, therefore, it can be a major cause of inflationary rise in prices.

Budgetary Deficit of central government of India was Rs. 2,576 crores in 1980-81, it went up to Rs. 11,347 crores in 1990-91 to Rs. 13,184 crores in 1996-97.

The concept of budgetary deficit has lost its significance after the presentation of the 1997-98 Budget. In this budget, the practice of ad hoc treasury bills as source of finance for government was discontinued. Ad hoc treasury bills are issued by the government and held only by the RBI. They carry a low rate of interest and fund monetized deficit. These bills were replaced by ways and means advance. Budgetary deficit has not figured in union budgets since 1997-98. Since 1997-98, instead of budgetary deficit, Gross Fiscal Deficit (GFD) became the key indicator.

#### **3. Fiscal Deficit**

Fiscal Deficit is a difference between total expenditure (both revenue and capital) and revenue receipts plus certain non-debt capital receipts like recovery of loans, proceeds from disinvestment.

In other words, fiscal deficit is equal to budgetary deficit plus governments market borrowings and liabilities. This concept fully reflects the indebtedness of the government and throws light on the extent to which the government has gone beyond its means and the ways in which it has done so. In 1980-81, fiscal deficit was Rs. 7,733 crores. Between 1980-81 and 1990-91 it increased 5 times to Rs. 37,606 crores. Since the introduction of economic reforms in 1991-92, the government has tried to restrict the growth of fiscal deficit. As percentage of GDP fiscal deficit declined from 6.2% in 2001-02 to 4.1% in 2005-06.

#### **4. Primary Deficit**

The fiscal deficit may be decomposed into primary deficit and interest payment. The primary deficit is obtained by deducting interest payments from the fiscal deficit. Thus, primary deficit is equal to fiscal deficit less interest payments. It indicates the real position of the government finances as it excludes the interest burden of the loans taken in the past.

Table below indicate primary deficit as a Percentage of GDP.

### Primary Deficit as % of GDP

<b>Year</b>	<b>% of GDP</b>
1990-91	2.8
2005-06	0.4

Primary deficit of the central government of India was 16,108 crores in 1990-91, it reduced to 14,591 crores in 2005-06.

#### 5. Monetised Deficit

Monetised Deficit is the sum of the net increase in holdings of treasury bills of the RBI and its contributions to the market borrowing of the government. It shows the increase in net RBI credit to the government. It creates equivalent increase in high powered money or reserve money in the economy.

#### Government Budgeting: Indian Budget for Beginners

The term 'Budget' is not mentioned in Indian Constitution. The related term mentioned is 'Annual Financial Statement'. In this post, we explain the basics of Indian Budget and Government Budgeting process for beginners.

#### What are the constitutional requirements which make Budget necessary?

##### Indian Budget

**Article 265:** provides that 'no tax shall be levied or collected except by authority of law'. [ie. Taxation needs approval of Parliament.]

**Article 266:** provides that 'no expenditure can be incurred except with the authorisation of the Legislature' [ie. Expenditure needs approval of Parliament.]

**Article 112:** President shall, in respect of every financial year, cause to be laid before Parliament, Annual Financial Statement.

##### Budget Documents

Do you know that Annual Financial Statement is only one of the several budget documents presented by Finance Minister?

The Budget documents presented to Parliament comprise, besides the Finance Minister's Budget

##### Speech, the following:

Annual Financial Statement (AFS) – Article 112

Demands for Grants (DG) – Article 113

Appropriation Bill – Article 114(3)

Finance Bill – Article 110 (a)

Memorandum Explaining the Provisions in the Finance Bill, 2014

Macro-economic framework for the relevant financial year – FRBM Act

Fiscal Policy Strategy Statement for the financial year – FRBM Act

Medium Term Fiscal Policy Statement – FRBM Act

Medium Term Expenditure Framework Statement – FRBM Act

Expenditure Budget Volume-1

Expenditure Budget Volume-2

Receipts Budget

Budget at a glance

Highlights of Budget

Status of Implementation of Announcements made in Finance Minister's Budget Speech of the previous financial year.

There are also other related documents like Detailed Demands for Grants, Outcome Budget, Annual Reports and Economic Survey presented along with the budget documents in Parliament.

**PS :** The documents shown at Serial 1, 2, 3 and 4 are mandated by Art. 112, 113, 114(3) and 110(a) of the Constitution of India respectively, while the documents at Serial 6, 7, 8 and 9 are presented as per the provisions of the Fiscal Responsibility and Budget Management Act, 2003. Other documents are in the nature of explanatory statements supporting the mandated documents with narrative or other content in a user friendly format suited for quick or contextual references. Hindi version of all these documents is also presented to Parliament.

### Railway Budget

**Do figures related to Railways find mention in Annual Financial Statement or are they part of only Railway budget?**

The Budget of the Indian Railways is presented separately to Parliament and dealt with separately. But the receipts and expenditure of the Railways form part of the Consolidated Fund of India and the figures relating to them are included in the 'Annual Financial Statement'.

### Budget Presentation

In India, the Budget is presented to Parliament on such date as is fixed by the President. Since 1999 the General Budget is being presented at 11 A.M. on the last working day of February, i.e. about a month before the commencement of the Financial year except in the year when General Elections to Lok Sabha are held. In an election year, Budget may be presented twice — first to secure Vote on Account for a few months and later in full.

### Vote on Account

The discussion on the Budget begins a few days after its presentation. Since Parliament is not able to vote the entire budget before the commencement of the new financial year (ie. within 1 month or so), the necessity to keep enough finance at the disposal of Government in order to allow it to run the administration of the country remains. A special provision is, therefore, made for "Vote on Account" by which Government obtains the Vote of Parliament for a sum sufficient to incur expenditure on various items for a part of the year.

Normally, the Vote on Account is taken for two months only. But during election year or when it is anticipated that the main Demands and Appropriation Bill will take longer time than two months, the Vote on Account may be for a period exceeding two months.

### So what exactly is Vote on Account?

Vote on Account is a special provision in every budget (and not only in an interim budget) by which Government obtains the Vote of Parliament for a sum sufficient to incur expenditure on various items for a part of the year, usually two months. Vote on Account deals only with expenditure part. But interim budget as well as full budget has both receipt and expenditure side.

So presentation and passing of vote on account is the first stage in the budget passing process. Vote on Account is necessary for the working of the government till the period the full budget is passed.

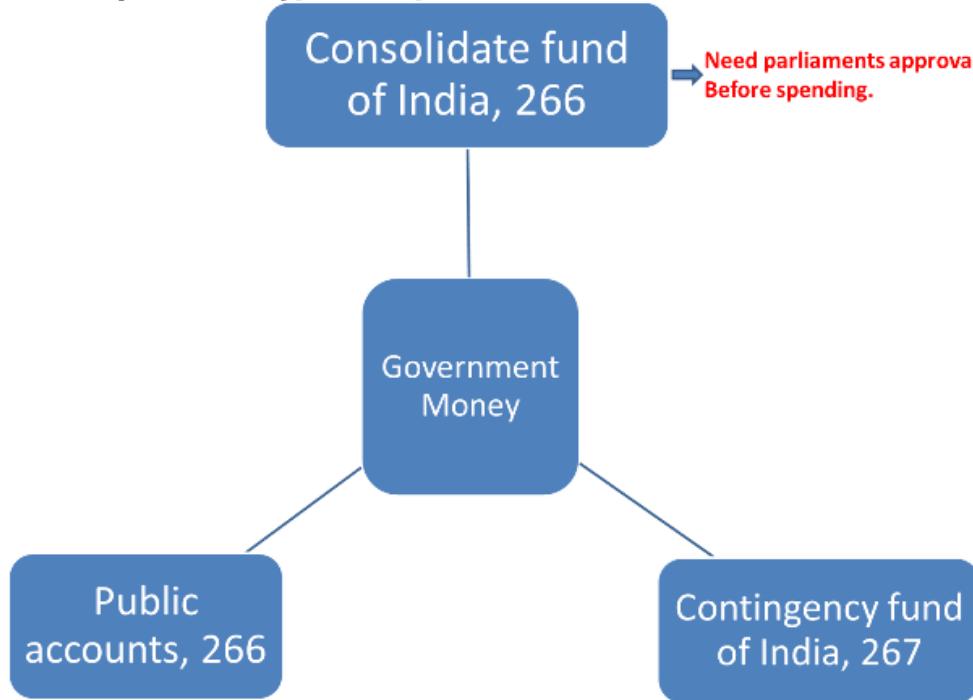
### Budget Speech

The Budget speech of the Finance Minister is usually in two parts. Part A deals with general economic survey of the country while Part B relates to taxation proposals. He makes a speech introducing the Budget and it is only in the concluding part of his speech that the proposals for fresh taxation or for variations in the existing taxes are disclosed by him. The 'Annual Financial Statement' is laid on the Table of Rajya Sabha at the conclusion of the speech of the Finance Minister in Lok Sabha.

### Types of funds in Budget

#### Consolidated fund of India (Article 266)

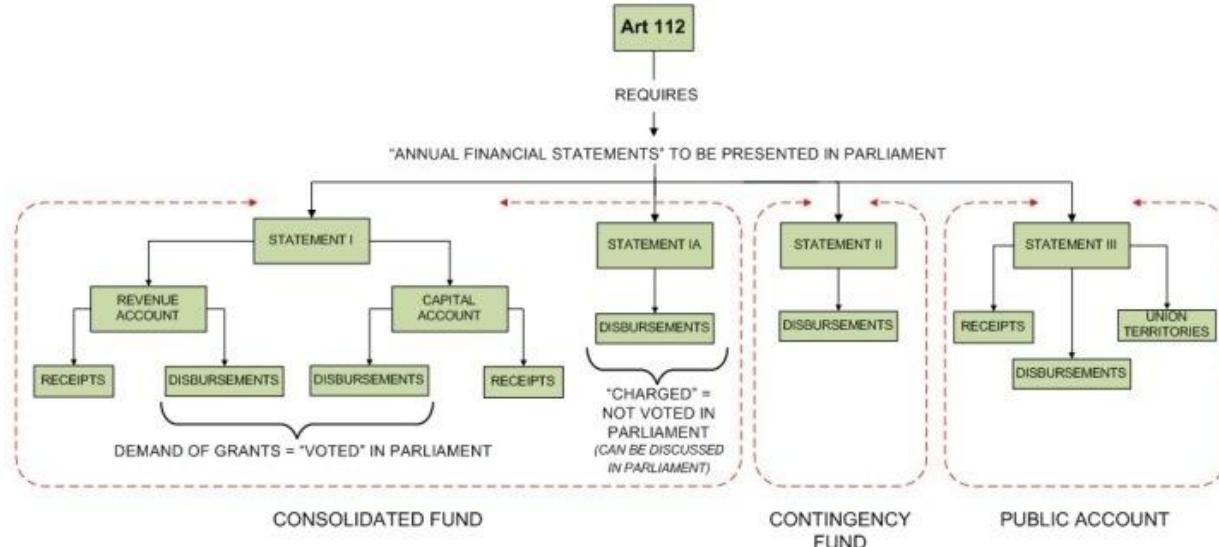
- All revenue received from direct and indirect taxes
- All loans taken by government of India
- Principle + Interest received by Government of India on loans given
- Needs parliament's approval to spend from this fund



#### Public Accounts of India (Article 266)

- Bank savings account of the departments/ministries (for day to day transactions)
- National Investment fund (NIF) – Money earned from disinvestment
- National Calamity & contingency fund (NCCF) (Under Home ministry) →Now merged with National Disaster Relief Fund (NDRF)
- National small savings fund, defense fund, provident fund, Postal insurance etc.

- All Cess & Specific purpose surcharges
- Government schemes Fund (Eg. MNREGA)
- No need of Parliament's approval to spend from this fund



### Contingency fund of India (Article 267)

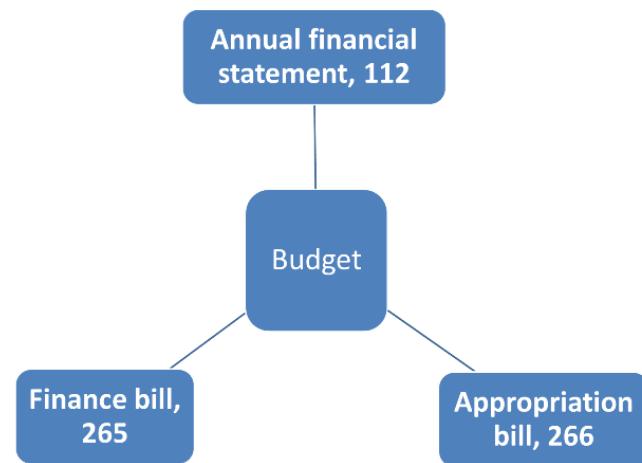
- Held by the President of India viz. Rs. 500 cr
- Operated by finance Secretary on accounts of President
- President can spend cash from this fund for emergency/unforeseen circumstances without the authorization of parliament
- Though parliament's approval is needed to again replenish this fund

### National investment fund

- Disinvestment → When Government sells its shares of Public sector undertaking
- Money earned via disinvestment doesn't go into Consolidated Fund Of India
- It goes to National investment fund (under Public accounts of India), therefore, outside parliament control.
- Three fund managers look after NIF viz. UTI, LIC and SBI
- Money from NIF goes in
  - buying shares of CPSE to ensure 51% government ownership

- recapitalizing public banks and insurance companies
  - Investing in EXIM bank, NABARD, Regional rural banks,
  - Uranium corporation, Nabhiya Vidyut Nigam
  - Metro projects and Indian railways capital Expenditure
- 

### Documents which form basis of Budget



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Annual Financial

Statement

Article 112 → To show the parliament data about all incoming and outgoing money

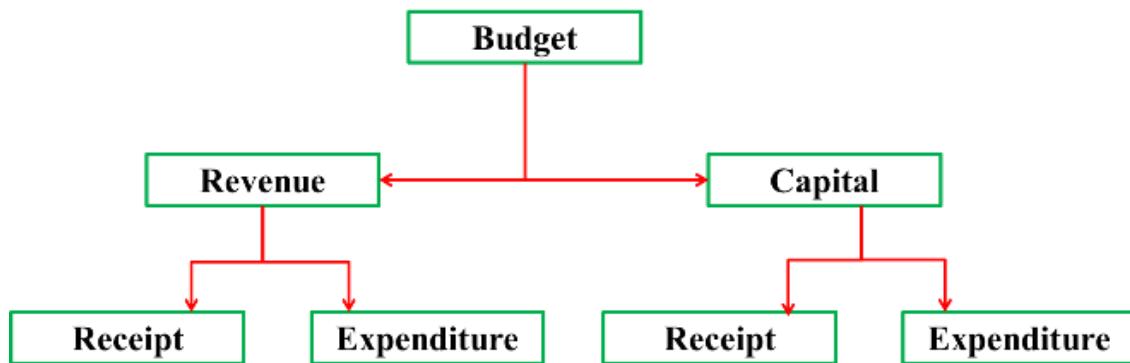
Finance Bill

Article 265 → To get permission of parliament to collect taxes from country people

Appropriation Bill

Article 266 → To get permission of parliament to take out cash from consolidated fund of India

Prominent part of current years' Budget → Forms Statement 1 of Next Year Annual Financial Statement



### Some Basic Terms Commonly Used in Budget

#### Vote on Account

- Passed By Lok Sabha every year → Bill for only Expenditure permission
- Cash required to meet the expenditure that it incurs mainly during the first two months of an financial year, until new appropriation bill is passed by the Lok Sabha, to keep the machinery running
- Cash is given from Consolidate Fund of India
- Generally 1/6<sup>th</sup>of the total estimated expenditure

#### Interim budget

- Passes in election year or in extreme situation
- Not morally correct for outgoing Government to make drastic changes
- Valid for Entire year viz. 1<sup>st</sup> April – 31<sup>st</sup> March; but new Government can change it
- Encloses all major portions of full-fledged budget viz.
  - Annual financial statement
  - Finance Bill for tax purpose
  - Appropriation Bill to take out money from consolidated fund of India to run the system for given financial year
  - Vote on Account to sort out cash problem for first two – four months of new financial year until new appropriation bill is passed

#### Caretaker Government

- Last Government continues to be in office, till new PM / CM arrives -

- After the term has expired
- After PM / CM has resigned
- No-confidence motion passed
- Parliament / Assembly dissolved

### Budgetary procedure in India

The budgetary procedure in India involves four different operations that are

- Preparation of the budget
- Enactment of the budget
- Execution of the budget
- Parliamentary control over finance

#### Preparation of the budget

The exercise of the preparation of the budget by the ministry of finance starts sometimes around in the month of September every year. There is a budget Division of the Department of Economic affair of the ministry of finance for this purpose.

The ministry of finance compiles and coordinates the estimates of the expenditure of different ministers and departments and prepare an estimate or a plan outlay.

Estimates of plan outlay are scrutinized by the Planning Commission. The budget proposals of finance ministers are examined by the finance ministry who has the power of making changes in them with the consultation of the prime minister.

#### Enactment of the budget

Once the budget is prepared, it goes to the parliament for enactment and legislation. The budget has to pass through the following stages:

- The finance minister presents the budget in the Lok Sabha. He makes his budget in the Lok Sabha. Simultaneously, the copy of the budget is laid on the table of the Rajya Sabha. Printed copies of the budget are distributed among the members of the parliament to go through the details of the budgetary provisions.
- The finance bill is presented to the parliament immediately after the presentation of the budget. Finance Bill relates to the proposals regarding the imposition of new taxes, modification on the existing taxes or the abolition of the old taxes.
- The proposals on revenue and expenditure are discussed in the Parliament. Members of the Parliament actively take part in the discussion.
- Demands for grants are presented to the Parliament along with the budget. These demands for grants show that the estimates of the expenditure for various departments and they need to be voted by the Parliament.
- After the demands for grants are voted by the parliament, the Appropriation Bill is introduced, considered and passed by the appropriation of the Parliament. It provides the legal authority for withdrawal of funds of what is known as the Consolidated Fund of India.
- After the passing of the appropriation bill, finance bill is discussed and passed. At this stage, the members of the parliament can suggest and make some amendments which the finance minister can approve or reject.
- Appropriation bill and Finance bill are sent to Rajya Sabha. The Rajya Sabha is required to send back these bills to the Lok Sabha within fourteen days with or without amendments. However, Lok Sabha may or may not accept the bill.

- Finance Bill is sent to the President for his assent. The bill becomes the statue after presidents' sign. The president does not have the power to reject the bill.

### Execution of the budget

- Once the finance and appropriation bill is passed, execution of the budget starts. The executive department gets a green signal to collect the revenue and start spending money on approved schemes.
- Revenue Department of the ministry of finance is entrusted with the responsibility of collection of revenue. Various ministries are authorized to draw the necessary amounts and spend them.
- For this purpose, the Secretary of minister's acts as the chief accounting authority.
- The accounts of the various ministers are prepared as per the laid down procedures in this regard. These accounts are audited by the Comptroller and Auditor General of India.

### Parliament Control over Finance

- There is a prescribed procedure by which the Finance Bill and the Appropriation Bill are presented, debated and passed.
- The Parliament being sovereign gives grants to the executive, which makes demands. These demands can be of varieties like the demands for grants, supplementary grants, additional grants, etc.
- The estimates of expenditure, other than those specified for the Consolidated Fund of India, are presented to the Lok Sabha in the form of demands for grants.
- The Lok Sabha has the power to assent to or to reject, any demand, or to assent to any demand, subject to a reduction of the amount specified. After the conclusion of the general debate on the budget, the demands for grants of various ministries are presented to the Lok Sabha.
- Formerly, all demands were introduced by the finance minister; but, now, they are formally introduced by the ministers of the concerned departments. These demands are not presented to the Rajya Sabha, though a general debate on the budget takes place there too.
- The Constitution provides that the Parliament may make a grant for meeting an unexpected demand upon the nation's resources, when, on account of the magnitude or the indefinite character of the service, the demand cannot be stated with the details ordinarily given in the annual financial statement.
- An Appropriation Act is again essential for passing such a grant. It is intended to meet specific purposes, such as for meeting war needs.

### Merging Railway budget into Union budget – Pros and Cons

After 92 years of seeing them separately, the year 2017 witnessed the Railway budget being merged into Union budget. This move is being lauded for it will be beneficial for the economy at large and there will be positive influence in the development in railways.

During the British reign, having a separate Railway budget made sense because a larger part of the country's GDP depended on railway revenue. The tradition of having the budgets separately continued when India gained freedom even though the revenue from railway continued to go lower than most of the organizations in the public and private sector.

#### Pros:

**1. The scores:** During the British rule Railways took up to 85 percent of the yearly budget while now it has gone down to about 15 percent only. Having separate railway budget stopped making sense long ago but the old tradition was not done away with. Scrapping the old for the renewed and better is always a positive change to look upon.

**2. Better policies:** Now that the Railway budget will be introduced along with the union budget, there will be less wastage of time when a new policy is to be initiated and implemented. Keeping them separate resulted in a lot of drawbacks and hindrances that had to be faced by the railway ministry before it could decide upon a solution.

**3. Party politics:** Minority parties fighting to meet their intentions and ministers of certain states arguing

new railways and trains for their region has always been known to result in an everlasting brawl. There will be less of political pressure on the Railway budget and the centre will have the ultimate hold of the decision making.

**4. Goodbye to annual dividend:** When Rail budget had to be introduced separately, the railways needed to pay an annual dividend to render its budgetary support to the government. The railways will be free of this now and the same fund could now be used in better ways for development the conditions of Indian railways.

**5. The huge loss:** Our railways are running on loss. There are lesser funds for development plans and most of them are wasted in wrongful manner when there emerges a demand from the regional MLA who promised new trains and stoppages for their location during the time of election. When it goes into the hands of finance ministry, it would mean an absolute end to this and a more commercialized distribution of resources.

#### Cons:

**1. The rise and fall:** Henceforth, the distribution and allocation of funds to various departments will all go under the finance ministry, which will take decisions according to rise and fall of budget. A fall in the annual budget will mean a similar cut in the railway and other budgets. This will be something unusual for the railways and they might not react supportively to that.

**2. Conditions of government departments:** The depleting conditions of the various departments under the government have always been prominent. There is lesser attention paid to the responsibilities and everyone is busy sorting out their own means. Railways might see drastic disadvantage if the merging doesn't reap the desired result.

**3. Goodbye to privatization:** There have previously been talks of privatization of Indian railways in order to improve and develop them with world class facilities and cleanliness. It was not well received earlier and after the merging, there will be a complete end to any future chances of privatization. At the efficient hands of government employees, nothing big could be expected.

**4. Loss for the railways:** We know how much our parties love making promises and then reducing price to earn the favor of the voters. Not in their wildest dreams would they want to hike the railway prices and lose the vote bank that flows from commuters. Lesser hikes in price might pose loss for the railways department.

There have been mismanagement of the highest order in Indian railways and if there are chances of seeing it improve, merging it with the Union budget is just the solution that could help. The falling revenue and more projects for new trains and stoppages have been a difficult project for the railway ministry which took the right step by merging the two budgets.

#### Budget advancement:

The objective behind this move is to have the Budget constitutionally approved by Parliament and assented to by the President, and all allocations at different tiers disseminated to budget-holders, before the financial year begins on April 1.

- The proposal for a change in the budget presentation date was first mooted by some of the government's senior most bureaucrats as part of a 'Transforming India' initiative in January 2016.

Presenting the budget earlier comes with both advantages and disadvantages.

#### Advantages:

- In the existing system, the Lok Sabha passes a vote on account for the April-June quarter, under which departments are provided a sixth of their total allocation for the year. This is done by March. The Finance Bill is not passed before late April or early May. If the Budget is read in January and passed by February-March, it would enable the government to do away with a vote on account for the first three months of a financial year.

- Retired and serving officials say the biggest plus would be that the Finance Bill, incorporating the Budget proposals, could be passed by February or March. So, government departments, agencies and state-owned companies would know their allocations right from April 1, when the financial year begins.
- It would also help the private sector to anticipate government procurement trends and evolve their business plans. And, civil society could deliberate on and give feedback in time for the parliamentary discussions.

**Disadvantages:**

- One big disadvantage of advancing the Budget preparations is lack of comprehensive revenue and expenditure data. Currently, work on the Budget begins in earnest by December. By the time it is finalised in mid-February, data on revenue collections and expenditure trends is available for the first nine months of the financial year, i.e April-December. Based on which, projections for the full year can be made.
- To read the Budget in January, the centre will have to start preparing it by early October. To go by less than six months of data and making projections for the full year and the next year, based on such an incomplete picture, will be an impossible task.
- Advancing the Budget dates would be fraught with practical difficulties. Effective Budget planning also depends on the monsoon forecasts for the coming year, making the advancing the whole exercise even more difficult.
- Besides, whether the chambers of Parliament and its standing committees will get adequate time to deliberate on the budget is a moot point. The standing committees of Parliament, whose charter is to examine the justification of the ministry-wise allocations and funding needs of concomitant programmes included in the Budget, undertake their scrutiny during a two to three-week gap within the budget session period, when the houses are adjourned. This scrutiny is an essential element in the parliamentary budget approval system.

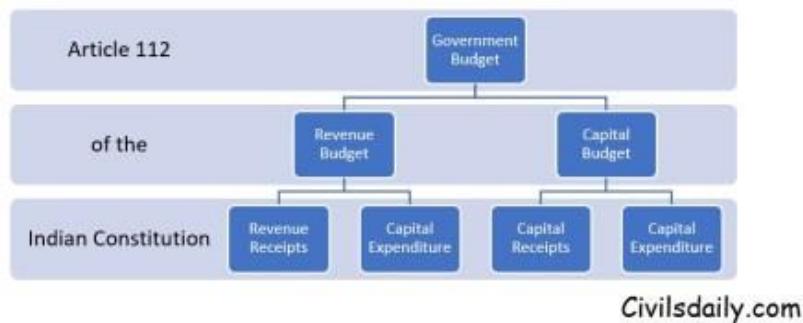
**Way ahead:**

Advancing the presentation of the Budget, so as to allow Parliament to vote on tax and spending proposals before the beginning of the new financial year on April 1, is a good idea. It would do away with the need for a vote on account and allow new direct tax measures to have a full year's play. Members of Parliament now will have to work hard over two months to vet Budget proposals, for this to work.

**Conclusion:**

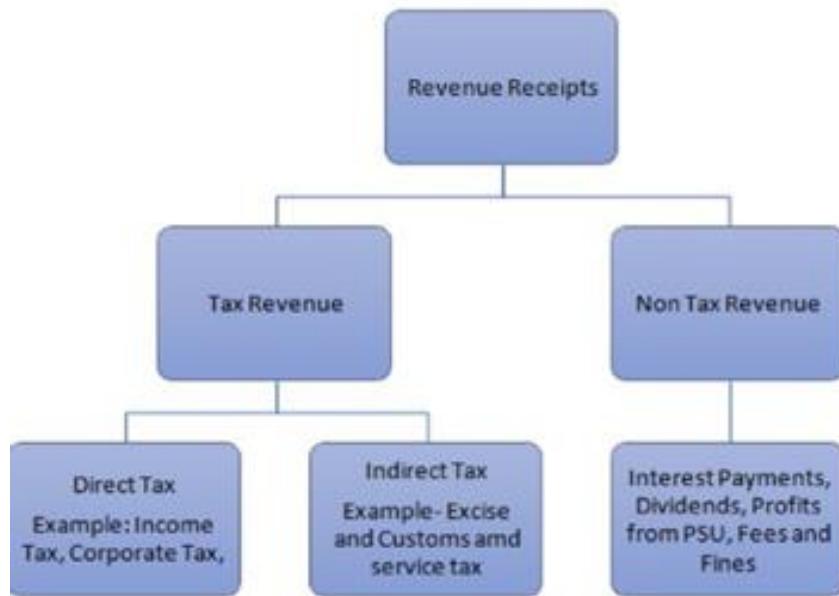
These reforms make sense, but Budget reform has to go further, to incorporate a multi-year time horizon and shift to outcome-linked expenditure management, as had been recommended by a committee headed by C Rangarajan in 2011.

## The Government Budget: Revenue Budget, Capital Budget, Government Deficits



### Revenue Account

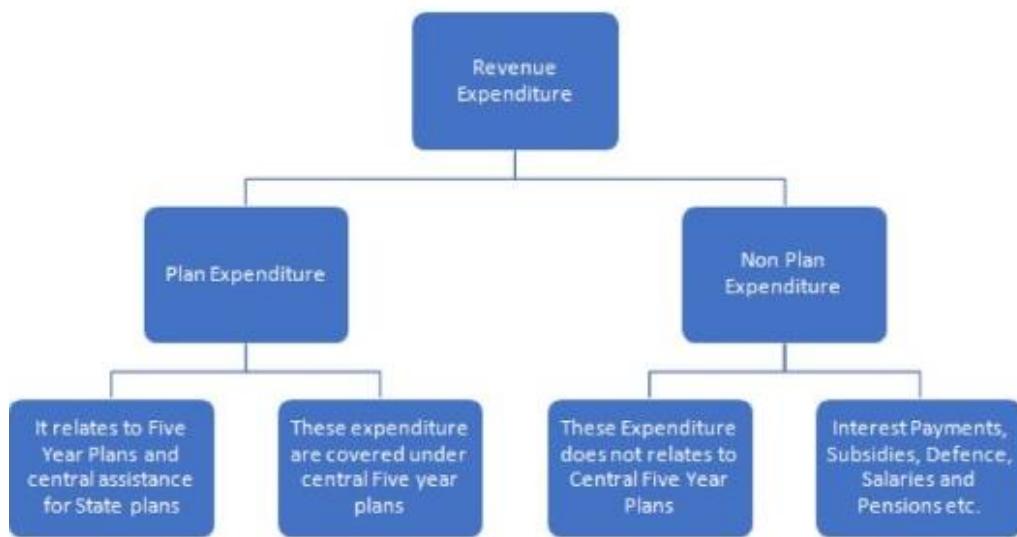
- The revenue account shows the current receipts of the government and the expenditure that can be met from these receipts.
- Revenue Receipts: RR are receipts of the government incomes which cannot be reclaimed back by the citizens from the government.



### Revenue Expenditure

- The expenditure incurred by the government that neither creates any physical/financial asset nor reduces the liability of the government. The Revenue expenditure relates to the day-to-day functioning of the government.
- Revenue expenditure is expenditure for normal running of the government department and various services, interest charges on debt incurred by government, subsidies and so on.
- Example: Salaries of employees, Interest payments on past debts, grants given to state governments etc.

**The Expenditure under Budget is divided into two subheads.**



- With the demise of Planning Commission, the Central Government has decided to do away with the classification of plan and non-plan expenditure. The 2018-19 Budget will not contain any such classification.

### The Capital Account

- The capital budget is an account of assets as well as liabilities of the central government.
- Capital Receipts:** All those receipts of the government which either creates liability or reduces financial asset are capital receipts.
- Examples: Market borrowings by the government from the public, Borrowings from the RBI, Borrowings from commercial banks or financial institutions through the sale of T-BILLS, loans received from foreign governments or international financial institutions, post office savings, post office saving certificates and PSU's Disinvestment.
- Capital Expenditure:** All those expenditures of the government which either result in the creation of physical/financial assets or reduction in financial liabilities.
- Examples:** Purchase of land, machinery, building and equipment's; investment in shares; loans and advances by the central government to state governments and UTs.
- Capital Expenditure is also classified as plan and non-plan capital expenditure. Plan expenditure relates to central Five-year Plan and Non-Plan relates to expenditure not covered under the Five-year

### Measuring Government Deficits

When a government spends more than it collects by way of revenues, it incurs deficits. There are various kinds of deficits incurred by the government, and each has its own implications.

Let's understand the concepts of deficits through a simple hypothetical household example of Robinson Crusoe.

#### The Revenue Side of Robinson Crusoe HHs:

Robinson Crusoe HHs has 5 members with a monthly family income of \$1000. The family pays a rent of \$2000, buys grocery worth of \$3000, pays interest of student education loan \$2000 and other expenses of \$4000. Now examine the expenditure and receipts side of HHs of Robinson Crusoe. The monthly salary of the HH is \$10000 (Revenue Receipts). The monthly expenditure of the HH is \$11000. The expenditure of the HH is recurring expenditure and the salary also come every month. This means the HH is neither creating any

assets or reducing its liabilities. But since the HH expenditure is more than its receipts; its running a deficit of \$1000. Which is known as revenue deficit.

### 1. Deficits on Revenue Account or Revenue Deficit

- The revenue deficit happens when revenue receipts fall short of revenue expenditure.
- $RD = \text{Revenue Expenditure} - \text{Revenue Receipts}$
- Implications:** When a government incurs revenue deficit, it implies that the government is not able to cover its day today expenses from its current receipts.
- It also implies that the government is using its past saving to finance its current consumption expenditure.
- The implication is the government will have to borrow in future to finance its current consumption expenditure. This will lead to building up of government debt and rising interest payments in future.
- Increase in interest payment obligations will again lead to increase in revenue expenditure and hence revenue deficits.
- The vicious circle of RD will continue until government start cutting on its wasteful expenditures.

#### The Capital Side of Robinson Crusoe HH.

Let's assume now, the Crusoe family, owns an ancestral land worth \$5000. The ancestral land is an asset. The family decides to sold this land, the proceeds from the selling of land is a capital receipt. Also, the selling of the land is a onetime process, thus it's a onetime receipt. Since, the selling of the land has nor created any debt, it is also called Non-Debt Creating Capital Receipt(NDCR).

The family has also taken an education loan worth \$2000. The loan is a liability since they have to return it. It's a debt on the family. Since the loan is creating debt it is known as debt creating capital receipt. Together they both constitute Capital Receipts of the Robinson HH.

The Robinson family decides to buy a small shop (\$5000) to supplement its family income. The buying of shop is leading to creation of an asset (the family can sale it latter or derive monthly income out of it by renting it out). This constitute the capital expenditure side of the HH.

#### The Fiscal deficit of the Robinson family will be:

$$\begin{aligned} &\{\$11000(\text{Revenue Exp}) + \$5000 (\text{capital exp})\} \text{ minus } \{\$10000 (\text{revenue rec}) + \$5000(\text{NDCR})\} \\ &= \$1000 \end{aligned}$$

### 1. Fiscal Deficit

The fiscal deficit is the difference between the government's total expenditure (both revenue and capital) and its total receipts excluding borrowings.

- $FD = \text{Total Expenditure} - (\text{Revenue Receipts} + \text{Non-Debt Creating Capital Receipts})$
- Non-Debt Creating Receipts are those receipts which are not classified as borrowings and do not give rise to debt.
- Examples Disinvestment proceeds from Public Sector Undertakings and recovery of loans by the central government.
- Implications:** Fiscal deficits has to be financed through borrowings, thus indicating total borrowing requirements of the government.
- Alternatively, FD can be seen as  $FD = \text{Net borrowing at home} + \text{Net borrowing from RBI} + \text{Net borrowing from Abroad}$ .
- Fiscal Deficit reflects the health of the economy; A large FD indicates the economy is under stress.

- A large FD can create inflation in the economy.
- A large FD makes the country unattractive to foreigners.
- A large FD can lead to outflow of capital from the country.
- A large FD crowd out/reduces private investment from the economy.

If a large part of FD is due to revenue deficit, it implies the government is borrowing to finance its consumption requirement. This is a dangerous situation, and soon the government will go bankrupt.

## 2. Primary Deficit

- The borrowing requirement of the government includes interest obligations on accumulated debt.
- The goal of measuring primary deficit is to focus on present fiscal imbalances.
- To obtain an estimate of borrowing on account of current expenditures exceeding revenues, we need to calculate what has been called the primary deficit.
- It is simply the fiscal deficit minus the interest payments
- Gross primary deficit = Gross fiscal deficit – Net interest liabilities

### The Capital Account

- The capital budget is an account of assets as well as liabilities of the central government.
- **Capital Receipts:** All those receipts of the government which either creates liability or reduces financial asset are capital receipts.
- Examples: Market borrowings by the government from the public, Borrowings from the RBI, Borrowings from commercial banks or financial institutions through the sale of T-BILLS, loans received from foreign governments or international financial institutions, post office savings, post office saving certificates and PSU's Disinvestment.
- **Capital Expenditure:** All those expenditures of the government which either result in the creation of physical/financial assets or reduction in financial liabilities.
- **Examples:** Purchase of land, machinery, building and equipment's; investment in shares; loans and advances by the central government to state governments and UTs.
- Capital Expenditure is also classified as plan and non-plan capital expenditure. Plan expenditure relates to central Five-year Plan and Non-Plan relates to expenditure not covered under the Five-year

### The Distinction in a Nutshell

Revenue Expenditure	Capital Expenditure	Capital Receipts
Neither Creates Any Assets nor reduces any liability for the government	Either Creates Assets or Reduces Liabilities	Either creates liabilities or reduces assets.
The revenue deficit happens when revenue receipts falls short of revenue expenditure.  RD = Revenue Expenditure - Revenue Receipts	The fiscal deficit is the difference between the government's total expenditure (both revenue and capital) and its total receipts excluding borrowings.	FD= Total Expenditure- (Revenue Receipts+ Non-Debt Creating

## Capital Receipts)

### Measuring Government Deficits

When a government spends more than it collects by way of revenues, it incurs deficits. There are various kinds of deficits incurred by the government, and each has its own implications.

#### Deficits on Revenue Account or Revenue Deficit

- The revenue deficit happens when revenue receipts fall short of revenue expenditure.
- RD = Revenue Expenditure – Revenue Receipts
- **Implications:** When a government incurs revenue deficit, it implies that the government is not able to cover its day to day expenses from its current receipts.
- It also implies that the government is using its past saving to finance its current consumption expenditure.
- The implication is the government will have to borrow in future to finance its current consumption expenditure. This will lead to building up of government debt and rising interest payments in future.
- Increase in interest payment obligations will again lead to increase in revenue expenditure and hence revenue deficits.
- The vicious circle of RD will continue until government starts cutting on its wasteful expenditures.

### Public expenditure

Budget is a statement of estimated receipts and expenditures of the government in respect of every financial year. Budgeting is the process of estimating the availability of resources and then allocating them to various activities of an organization according to a pre-determined priority.

**There are two different sets of classifications used – Plan vs Non-plan**

#### 1. Plan Expenditure:

Any expenditure that is incurred on programmes which are detailed under the current (Five Year) Plan of the centre or centre's advances to state for their plans is called plan expenditure. Provision of such expenditure in the budget is called Plan Expenditure.

Expressed alternatively, "plan expenditure is that public expenditure which represents current development and investment outlays (expenditure) that arise due to proposals in the current plan." Such expenditure is incurred on financing the Central plan relating to different sectors of the economy.

#### Items of plan expenditure are:

Expenditure on electricity generation, (ii) Irrigation and rural developments, (iii) Construction of roads, bridges, canals (iv) Science, technology, environment, etc. It includes both revenue expenditure and capital expenditure. Again, the assistance given by the Central Government for the plans of States and Union Territories (UTs) is also a part of plan expenditure.

#### 1. Non-plan expenditure:

These include interest payments on government debt, expenditure on organs of the state such as the judiciary and the police and even expenditure on the maintenance of existing government establishments such as schools and hospitals. Non-plan expenditure too, has revenue and capital components.

The plan expenditure of the government is normally associated with productive expenditure, which helps increase the productive capacity of the economy. It includes outlays for different sectors such as rural development and education. Non-plan expenditure, on the other hand, includes expenses on heads such as interest payment on government debt, subsidies, defence, pensions and other establishment costs of the government. A large part of this is obligatory in nature. For example, the government may cut allocation

towards rural development or education if it falls short of funds, but it cannot cut interest payments on borrowed funds.

At any point of time, the government has limited resources that it is able to generate through tax and non-tax revenue. Therefore, there is always a trade-off between spending on one head or another. However, what happens is that under pressure to contain expenditure, the government ends up cutting the plan expenditure since a part of the non-plan expenditure is either an obligation or a necessity for the state to function and, therefore, difficult to cut.

The classification of expenditure as plan and non-plan had become "dysfunctional" and it had created a bias among policymakers in favour of plan expenditure. Since non -plan expenditure is considered wasteful insignificant amounts are allocated for it which leads to lack of maintenance of the asset created under plan budget which ultimately adversely effects the outcomes of the expenditure incurred on plan budget.

### **Peacock Wiseman Hypothesis – Public Expenditure**

Peacock and Jack Wiseman advanced the study of growth of public expenditure through Peacock Wiseman Hypothesis by their study of public expenditure at Great Britain during the period 1890 to 1955. Peacock Wiseman Hypothesis focused on the pattern of public expenditure and stated that public expenditure does not follow a smooth or continuous trend but the increase in public expenditure takes place in jerks or steps.

**They gave three separate concepts to justify the hypothesis, they are:**

Displacement Effect

Inspection Effect

Concentration effect

According to Peacock Wiseman Hypothesis, due to some social or other disturbance in an economy there is a need for increased expenditure as the existing public revenue cannot solve the disturbance.

The fiscal activities of the government rise step by step to successive new higher level during the span of decades to meet successive social disturbances.

#### **Displacement Effect**

When a social disturbance occurs the government raises taxes to increase revenue and increases public expenditure to meet the social disturbance. This creates a displacement effect by which low taxes and expenditures are replaced by higher tax and expenditure levels. However, after the disturbance ends, the newly emerged level of tax tolerance makes the people willing to support higher level of public expenditure since it is capable of bearing heavier tax burden than before. As a result, the new level of public expenditure and public revenue stabilize but are soon destabilized by another new disturbance which causes another displacement effect.

#### **Inspection effect**

Even if there is no new disturbance there is no strong motivation to return to lower level of taxation as the increased revenue can be used to support a higher level of public expenditure. Therefore government expands its fiscal operations partly due to disturbance and partly to expand economic activity and take up new functions that were earlier neglected. This is known as Inspection effect.

#### **Concentration effect**

When an economy is experiencing economic growth there is a tendency of central government's economic activities to grow at a faster rate than that of state and local government's activities. This is known as concentration effect. It is related to the political set up of the country.

#### **Conclusion**

The Peacock Wiseman hypothesis of government spending trend is more convincing than in Wagner's hypothesis. The natural course of advancement and structural changes in an economy leads to constant and systematic expansion of public expenditure. An increase in public expenditure can also be accredited to urbanization, population growth, awareness of civil rights, awareness of duties by the State government etc.

### **Meaning of Public Revenue:**

The income of the government through all sources is called public income or public revenue.

According to Dalton, however, the term "Public Income" has two senses — wide and narrow. In its wider sense it includes all the incomes or receipts which a public authority may secure during any period of time. In its narrow sense, however, it includes only those sources of income of the public authority which are ordinarily known as "revenue resources." To avoid ambiguity, thus, the former is termed "public receipts" and the latter "public revenue."

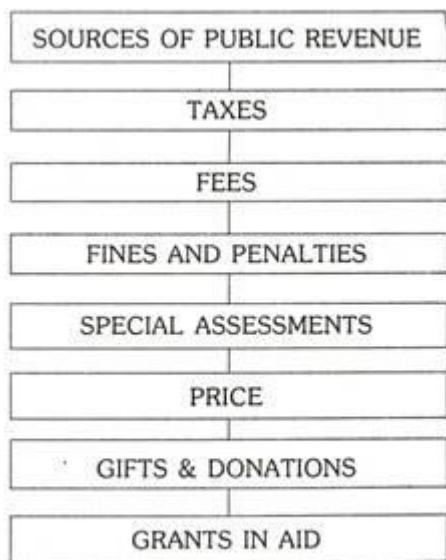
As such, receipts from public borrowings (or public debt) and from the sale of public assets are mainly excluded from public revenue. For instance, the budget of the Government of India is classified into "revenue" and "capital." "Heads of Revenue" include the heads of income under the capital budget are termed as "receipts." Thus, the term "receipts" includes sources of public income which are excluded from "revenue."

In a modern welfare state, public revenue is of two types, tax revenue and non-tax revenue.

### **Tax Revenue:**

A fund raised through the various taxes is referred to as tax revenue. Taxes are compulsory contributions imposed by the government on its citizens to meet its general expenses incurred for the common good, without any corresponding benefits to the tax payer. As Taussig puts it, "the essence of a tax, as distinguished from other charges by government, is the absence of a direct quid pro quo between the tax payer and the public authority."

Seligman defines a tax thus: "A tax is a compulsory contribution from a person to the government to defray the expenses incurred in the common interest of all, without reference to specific benefits conferred."



**Chart I**

### **The main characteristic features of a tax are as follows:**

1. A tax is a compulsory payment to be paid by the citizens who are liable to pay it. Hence, refusal to pay a tax is a punishable offence.

2. There is no direct, quid pro quo between the tax-payers and the public authority. In other words, the tax payer cannot claim reciprocal benefits against the taxes paid. However, as Seligman points out, the state has to do something for the community as a whole for what the tax payers have contributed in the form of taxes.

"But this reciprocal obligation on the part of the government is not towards the individual as such, but towards the individual as part of a greater whole."

3. A tax is levied to meet public spending incurred by the government in the general interest of the nation. It is a payment for an indirect service to be made by the government to the community as a whole.

4. A tax is payable regularly and periodically as determined by the taxing authority.

Taxes constitute a significant part of public revenue in modern public finance. Taxes have macro-economic effects. Taxation can affect the size and mode of consumption, pattern of production and distribution of income and wealth.

Progressive taxes can help in reducing inequalities of income and wealth by lowering the high income group's disposable income. By disposable income is meant the income left in the hands of the tax payer for disbursement after tax payment. Taxes imply a forced saving in a developing economy. Thus, taxes constitute an important source of development finance.

#### **Non-Tax Revenue:**

Public income received through the administration, commercial enterprises, gifts and grants are the source of non-tax revenues of the government.

Thus, non-tax revenue includes:

- (i) Administrative revenue
- (ii) Profit from state enterprises
- (iii) Gifts and grants

#### **Administrative Revenues:**

Under public administration, public authorities can raise some funds in the form of fees, fines and penalties, and special assessments.

#### **Fees:**

Fees are charged by the government or public authorities for rendering a service to the beneficiaries. To quote Seligman, "A fee is a payment to defray the cost of each recurring service undertaken by the government, primarily in the public interest, but conferring a measurable advantage to the payer."

Court fees, passport fees, etc., fall under this category. Similarly, licence fees are charged to confer a permission for something by the controlling authority, e.g., driving licence fee, import licence fee, liquor permit fee, etc. Fees are to be paid by those who receive some special advantages. Generally the amount of the fee depends upon the cost of services rendered.

Fees are a bye- product of the administrative activities of the government and not a payment for a business. Thus, fees are distinct from prices. Prices are always voluntary payments, but fees are compulsory contributions, though both are made for special services. Sometimes a fee contains an element of tax when it is charged high in order to bring revenue to the exchequer e.g., a licence fee.

#### **Fines and Penalties:**

Fines and penalties are levied and collected from offenders of laws as punishment. Here the main object of these levies is not so much to earn an income as to prevent the commission of offences and infringement of laws of the country. Fines and penalties are arbitrarily determined and have no relation to the cost of

administration or activities of the government. Hence, collections from such levies are insignificant as a source of public revenue.

#### **Special Assessments:**

"A special assessment," as Seligman points out, "is a compulsory contribution levied in proportion to the social benefits derived to defray the cost of a specific improvement to property undertaken in the public interest." That is to say, sometimes when the government undertakes certain types of public improvements such as construction of roads, provision of drainage, street lighting etc., it may confer a special benefit to those possessing properties nearby.

As a result, values of rents of these properties may rise. The government, therefore, may impose some special levy to recover a part of the expenses so incurred. Such special assessment is levied generally in proportion to the increase in the value of the properties involved. In this respect, it differs from a tax.

In India, these special assessments are referred to as "betterment levy." Betterment levy is imposed on land when its value is enhanced by the construction of social overhead capital such as roads, drainage, street-lighting, etc. by the public authority in an area.

#### **Profits of State Enterprise:**

Profits of state undertakings also are an important source of revenue these days, owing to the expansion of the public sector. For instance, the central government runs railways. Surplus from railway earnings can be normally contributed to the revenue budget of the central budget.

Likewise, profits from the state transport corporation and other public undertakings can be important sources of revenue for the budgets of state governments. Similarly, other commercial undertakings in the public sector such as Hindustan Machine Tools, Bokaro Steel Plant, State Trading Corporation etc. can make profits to support the central budget.

Earnings from state enterprises depend upon the prices charged by them for their goods and services and the surplus derived therefrom. Thus, the pricing policy of state undertakings should be self-supporting and reasonably profit-oriented. Again, prices are charged with an element of quid pro quo i.e., directly in proportion to the benefits conferred by the services rendered.

A price is a form of revenue derived by the government by selling goods and services of public enterprises. Thus, price is the revenue obtained from business activity undertaken by the public authorities. Many public enterprises like postal services run on cost-to-cost basis. The prices are charged just to cover the cost of rendering such services.

However, in certain cases, when the state has an absolute monopoly, prices having a high profit element are charged. Such monopoly profits of a state enterprise are in the nature of a tax. The difference between price and fee is this: the former usually can never be less than the cost of production or service, while the latter may not necessarily cover the cost of service.

#### **Gifts and Grants:**

These form generally a very small part of public revenue. Quite often, patriotic people or institutions may make gifts to the state. These are purely voluntary contributions. Gifts have some significance, especially during war time or an emergency.

In modern times, however, grants from one government to another have a greater importance. Local governments receive grants from state governments and state governments from the centre. The central government gives grants- in-aid to state governments in order to enable them to carry out their functions. When grants are made by one country's government to another country's government it is called foreign aid. Usually poor countries receive such aid from developed countries, which may be in the form of military aid, economic aid, food aid, technological aid, and so on.

#### **Classification of Public Revenue:**

Different economists have classified the sources of public revenue differently. A scientific classification enables us to know in what respects these various sources resemble one another and in what ways they differ. Of the various classifications of public revenue available in economic literature, we shall review a few important ones.

#### Seligman's Classification:

Seligman classifies public revenue into three groups:

- (i) **Gratitious revenue**
- (ii) **Contractual revenue**
- (iii) **Compulsory revenue**

**Gratitious revenue** comprises all revenues such as gifts, donations and grants received by the public authorities free of cost. They are entirely of a voluntary nature. Further, these are very insignificant in the total revenue.

**Contractual revenue** includes all those types of revenue which arise from the contractual relations between the public authority and the people. Fees and prices fall into this category. A direct quid pro quo is usually present in these types of revenue.

**Compulsory revenue** includes income derived by the state from administration, justice, and taxation. Taxes, fines and special assessments are regarded as compulsory revenue. These revenues express an element of state sovereignty. It is the most significant type of public revenue in modern times.

#### Dalton's Classifications:

Dalton provides a very systematic, comprehensive and instructive classification of public revenue. In this opinion, there are two main sources of public revenue — taxes and prices. Taxes are paid compulsorily whereas prices are paid voluntarily by individuals, who enter into contracts with the public authority. Thus, prices are contractual payments.

**Taxes are sub-divided into:** (i) Taxes in the ordinary sense; (ii) Tributes and indemnities; (iii) Compulsory loans, and (iv) Pecuniary penalties for offences.

**Prices are sub-divided into:** (i) Receipts from public property passively held such as rents received from the tenants of public lands; (ii) Receipts from public enterprises charging competition rates; (iii) Fees or payments charged for rendering administration services, such as birth and death registration fees, and (iv) Voluntary public debt.

To these two groups must be added another group to make the classification exhaustive. Under this group, the following items are included: (i) receipts from public monopolies, charging higher prices; (ii) special assessments; (iii) issue of new paper money or deficit financing; and (iv) voluntary gifts.

#### Taylor's Classification:

The most logical and scientifically based classification of public revenue is however provided by Taylor. He divides public revenue into four categories:

- (i) Grants and gifts
- (ii) Administrative revenues
- (iii) Commercial revenues
- (iv) Taxes

#### Grants and gifts:

Grants-in-aid are the means by which one government provides financial assistance to another to enable it to perform certain specified functions, for example, education and health grants made to the states by the central government.

Grants- in-aid are the cost payments made by the grantor government and revenue receipts to the grantee, and no obligation of repayment is involved. Gifts are voluntary contributions from individuals or institutions for specific purposes. Grants and gifts are voluntary in nature and there is absence of quid pro quo to the donor.

#### **Administrative Revenues:**

Under this group, fees, licenses, fines and special assessments are included. Most of these are voluntary in nature and based upon the direct benefits accruing to the payer. They generally arise as a by-product of the administrative or control function of the government.

#### **Commercial Revenues:**

These are the receipts by way of prices paid for government produced goods and services. Under this group, postal charges, tolls, interest on loans of state financial institutions or nationalised banks, tuition fees of public educational institutions are included.

#### **Taxes:**

These are compulsory payments made to government without expecting a direct return of benefits. The taxes involve varying degrees of coercive powers.

#### **Meaning of Incidence:**

The problem of the incidence of a tax is the problem of who pays it. Taxes are not always borne by the people who pay them in the first instance.

They are sometimes shifted on to other people. They are sometimes shifted on to other people.

Incidence means the final resting place of a tax. The incidence is on the man' who ultimately bears the money burden of the tax.

Impact and Incidence Distinguished. We may distinguish between impact and incidence. The impact of the tax is on the person who pays it in the first instance and the incidence is on the one who finally bears it. If an excise duty is imposed on sugar, it is paid in the first instance by the sugar manufacturers; the impact is on them. But the duty will be added to the price of the sugar sold, which, through a series of transfers, will ultimately fall on the consumer of sugar. The incidence is, therefore, on the final consumer.

#### **Incidence is not shifting:**

Shifting means the process of transfer, i.e., the passing of the tax from the one who first pays it to the one who finally bears it. It is through this process of shifting that the incidence of a tax comes finally to rest somewhere. The process of shifting may be slow or may be only partially effective so that the burden of a tax may not fall entirely on the person, who is intended to bear it.

#### **Incidence and Effects:**

The effect of a tax refers to incidental results of the tax. There are several consequences of the imposition of tax which are quite distinct from the problem of incidence. The imposition of an excise duty on sugar, we have can is shifted ultimately to the consumer of sugar.

The incidence is on the consumer. But the effects of this duty may be far-reaching! A heavy excise duty may cripple the industry. The manufacturer's profits will be reduced. Wages may be reduced. Labour and capital may have to leave the industry.

Thousands of middlemen engaged in the distribution of sugar may find their earnings reduced. Reshuffling of their family budgets may affect the demand for certain other goods. The consumption of sugar may decrease and that of its substitutes may increase. All these are the effects of the tax.

#### **Importance of incidence:**

The study of incidence is very-important. The tax system is not merely aimed at raising a certain amount of revenue, but the aim is to raise it from these sections of the people who can best bear the tax. The aim, in short, is to secure a just distribution of the tax burden.

This obviously cannot be done unless an effort is made to trace the incidence of each tax levied by the State. We must know who pays it ultimately in order to find out whether it is just to ask him to pay it, or whether the burden imposed on him is according to the ability of the tax-payer or not.

#### **Effects of Taxes:**

The most important objective of taxation is to raise required revenues to meet expenditures. Apart from raising revenue, taxes are considered as instruments of control and regulation with the aim of influencing the pattern of consumption, production and distribution. Taxes thus affect an economy in various ways, although the effects of taxes may not necessarily be good. There are same bad effects of taxes too.

#### **Economic effects of taxation can be studied under the following headings:**

##### **1. Effects of Taxation on Production:**

Taxation can influence production and growth. Such effects on production are analysed under three heads:

- (i) effects on the ability to work, save and invest
- (ii) effects on the will to work, save and invest
- (iii) effects on the allocation of resources.

##### **2. Effects on the Ability to Work Save:**

Imposition of taxes results in the reduction of disposable income of the taxpayers. This will reduce their expenditure on necessities which are required to be consumed for the sake of improving efficiency. As efficiency suffers ability to work declines. This ultimately adversely affects savings and investment. However, this happens in the case of poor persons.

Taxation on rich persons has the least effect on the efficiency and ability to work. Not all taxes, however, have adverse effects on the ability to work. There are some harmful goods, such as cigarettes, whose consumption has to be reduced to increase ability to work. That is why high rate of taxes are often imposed on such harmful goods to curb their consumption.

But all taxes adversely affect ability to save. Since rich people save more than the poor, progressive rate of taxation reduces savings potentiality. This means low level of investment. Lower rate of investment has a dampening effect on economic growth of a country.

Thus, on the whole, taxes have the disincentive effect on the ability to work, save and invest.

##### **3. Effects on the will to Work, Save and Invest:**

The effects of taxation on the willingness to work, save and invest are partly the result of money burden of tax and partly the result of psychological burden of tax.

Taxes which are temporarily imposed to meet any emergency (e.g., Kargil Tax imposed for a year or so) or taxes imposed on windfall gain (e.g., lottery income) do not produce adverse effects on the desire to work, save and invest. But if taxes are expected to continue in future, it will reduce the willingness to work and save of the taxpayers.

Taxpayers have a feeling that every tax is a burden. This psychological state of mind of the taxpayers has a disincentive effect on the willingness to work. They feel that it is not worth taking extra responsibility or putting in more hours because so much of their extra income would be taken away by the government in the form of taxes.

However, if taxpayers are desirous of maintaining their existing standard of living in the midst of payment of large taxes, they might put in extra efforts to make up for the income lost in tax.

It is suggested that effects of taxes upon the willingness to work, save and invest depends on the income elasticity of demand. Income elasticity of demand varies from individual to individual.

If the income demand of an individual taxpayer is inelastic, a cut in income consequent upon the imposition of taxes will induce him to work more and to save more so that the lost income is at least partially recovered. On the other hand, the desire to work and save of those people whose demand for income is elastic will be affected adversely.

Thus, we have conflicting views on the incentives to work. It would seem logical that there must be a disincentive effect of taxes at some point but it is not clear at what level of taxation that crucial point would be reached.

#### **4. Effects on the Allocation of Resources:**

By diverting resources to the desired directions, taxation can influence the volume or the size of production as well as the pattern of production in the economy. It may, in the ultimate analysis, produce some beneficial effects on production. High taxation on harmful drugs and commodities will reduce their consumption.

This will discourage production of these commodities and the scarce resources will now be diverted from their production to the other products which are useful for economic growth. Similarly, tax concessions on some products are given in a locality which is considered as backward. Thus, taxation may promote regional balanced development by allocating resources in the backward regions.

However, not necessarily such beneficial effect will always be reaped. There are some taxes which may produce some unfavourable effects on production. Taxes imposed on certain useful products may divert resources from one region to another. Such unhealthy diversion may cause reduction of consumption and production of these products.

#### **5. Effects of Taxation on Income Distribution:**

Taxation has both favourable and unfavourable effects on the distribution of income and wealth. Whether taxes reduce or increase income inequality depends on the nature of taxes. A steeply progressive taxation system tends to reduce income inequality since the burden of such taxes falls heavily on the richer persons.

But a regressive tax system increases the inequality of income. Further, taxes imposed heavily on luxuries and non-essential goods tend to have a favourable impact on income distribution. But taxes imposed on necessary articles may have regressive effect on income distribution.

However, we often find some conflicting role of taxes on output and distribution. A progressive system of taxation has favourable effect on income distribution but it has disincentive effects on output.

A high dose of income tax will reduce inequalities but such will produce some unfavourable effects on the ability to work, save, investment and, finally, output. Both the goals—the equitable income distribution and larger output—cannot be attained simultaneously.

#### **6. Other Effects of Taxation:**

If taxes produce favourable effects on the ability and the desire to work, save and invest, there will be a favourable effect on the employment situation of a country. Further, if resources collected via taxes are utilized for development projects, it will increase employment in the economy. If taxes affect the volume of savings and investment badly then recession and unemployment problem will be aggravated.

Again, effect of taxes on the price level may be favourable and unfavourable. Sometimes, taxes are imposed to curb inflation. Again, as an imposition of commodity taxes lead to rising costs of production, taxes aggravate the problem of inflation.

Thus, taxation creates both favourable and unfavourable effects on various parameters. Unfavourable effects of taxes can be wiped out by the judicious use of progressive taxation.

### **What is tax buoyancy, how it works for the government?**

#### **What is tax buoyancy**

There is a strong connection between the government's tax revenue earnings and economic growth. The simple fact is that as the economy achieves faster growth, the tax revenue of the government also goes up.

Tax buoyancy explains this relationship between the changes in government's tax revenue growth and the changes in GDP. It refers to the responsiveness of tax revenue growth to changes in GDP. When a tax is buoyant, its revenue increases without increasing the tax rate.

#### **How tax buoyancy works?**

A simple example in the context of our economy indicates the power of this concept. In 2007-08, everything was fine for the economy. GDP growth rate was nearly 9 per cent.

Tax revenue of the government, especially, that of direct taxes registered a growth rate of 45 per cent in 2007-08. We can say that the tax buoyancy was five (45/9).

Now in the next year, in the wake of the global financial crisis impact, GDP growth came down to six percent. Tax revenue growth also fell steeply; to 18 per cent. This means tax buoyancy was 3 for the year. We can imagine that had the GDP growth came down further in the next year, to say 4 per cent, tax revenue growth would have fell to 8 per cent; indicating a tax buoyancy of 2.

Hence, tax buoyancy shows the association between economy's performance and the government's 'happiness' (tax revenue). It indicates the high sensitivity of tax revenue realisation to GDP growth.

This concept reveals some interesting aspects as well as some interesting questions. First thing is that the government can feel relieved and happy if the economy achieves higher growth. It may not borrow highly to finance the budget. New schemes and programmes can be lavished because of high revenue growth. In 2007-08, the then FM, P Chidambaram could not hide his joy by declaring that he is the happiest of all FMs. Understandably, the biggest beneficiary of a higher GDP growth rate is the government itself.

Second is that tax buoyancy will be highest for direct taxes. As the economy grows fast, the additional income generated may go to the rich group. A part of that they have to pay to the government in the form of taxes. So if the GDP growth rate registers high say, nine percent, direct income tax collection will accelerate. Generally, direct taxes are more sensitive to GDP growth rate.

### **What is tax elasticity?**

A similar looking concept is tax elasticity. It refers to changes in tax revenue in response to changes in tax rate. For example, how tax revenue changes if the government reduces corporate income tax from 30 per cent to 25 per cent indicate tax elasticity.

#### **Tax buoyancy:**

The concepts of tax buoyancy or tax efficiency are used to measure the responsiveness of tax revenue to the economic growth. Tax buoyancy is a crude measure which does not distinguish between discretionary or automatic growth of revenue.

#### **Tax Elasticity:**

Elasticity is a preferred measure of tax responsiveness since it controls for automatic revenue changes. In which we study, the buoyancies or elasticities of the major taxes in a representative developing economy, the

Ivory Coast, are estimated using the alternative estimation techniques or comparisons between buoyancies or elasticities are drawn. In general, tax receipts in the Ivory Coast tend to be slightly inelastic while particular taxes such as the value added tax are highly elastic. The results of the study have an important policy as well as research implications.

### **WHAT IS TAXABLE CAPACITY**

The concept of taxable capacity has been defined differently by different economists. In the words of Sir Josiah Stamp:

"Taxable capacity is that maximum amount which the community is in a position to bear towards the expenses of public authorities without having a really unhappy and! down-trodden existence and without dislocating the economic organization too much".

#### **According to Findlay Shiraz:**

"It is the optimum tax ability of a nation, the maximum amount of taxation that can be raised and spent on the economic welfare in that community".

Dalton calls it a dim and "contused conception". He writes in his book "Principles of Public Finance":

"Absolute taxable capacity is a myth and should be banished from all serious discussions of public finance".

For the various definitions of taxable capacity given by eminent writers on Public Finance, we gather that by taxable capacity is meant the maximum amount which a nation can contribute towards the support of the government without inflicting damage on the power and will to produce.

The amount of tax burden which the citizens of a country are ready to bear is not rigidly fixed. It can increase or decrease with a change in the distribution of wealth, the size of population, method of taxation, etc. etc.

In other words, we can say that the limit of taxable capacity is a relative and not an absolute quantity.

#### **Factors of Taxable Capacity:**

The main factors which determine the taxable capacity of a nation are:

**(i) The size of population:** Taxable capacity is very much affected by the increase in national income and by the rate of growth in population. If the increase in national income is greater than the growth in population, the per capita income goes up. The taxable capacity of the individuals rises. If the rate of growth of population is higher than the national income, the taxable capacity decreases.

**(ii) The distribution of national income:** Taxable capacity is also influenced by the distribution of national income within a country. If there is unequal distribution of wealth in the country, the taxable capacity of the nation will be high, but if the income is equally distributed, then the taxable capacity will be low. A man earning an income of \$50,000 a month is able to pay more to the government than thirty persons earning \$300 per month.

**(iii) Character of taxation:** If taxes are devised wisely, then they give less resentment from people and bring forth a large yield.

**(iv) Purpose of taxation:** Purpose of taxation has a direct bearing on taxable capacity of a nation. If citizens of country are satisfied with purpose. of taxation i.e., the increase in welfare of people, then they show greater willingness to pay taxes to government. Whereas, if they find that revenue will be spent for unproductive purposes, they hesitate to pay taxes.

We conclude, therefore, that if state spends revenue for purposes such as education, sanitation, fighting for famine, diseases, etc., then taxable capacity of nation expands to its utmost and if revenue is spent for unproductive purpose like war, then taxable capacity shrinks.

**(v) Psychological factor:** Psychological factor, is a very important factor in determining taxable capacity of a nation. If people are satisfied that government is doing its utmost to raise standard of living of masses and in maintaining prestige of country, then they try to sacrifice their lives what to say of money for the government. A simple approach to patriotism brings forth tons of gold.

**(vi) Standard of living of people:** If standard of living of people is high, they work more efficiently so that they may enjoy a still better standard of living. When they work enthusiastically, they receive higher wages from their employers. Taxable capacity tends to increase then.

**(vii) Effect of inflation:** If country is in grip of inflation, purchasing power of people is reduced, taxable capacity of nation shrinks considerably. But if value of money is high and country is not faced with unemployment, then taxable capacity of people is quite high.

### Conclusion:

We have discussed above various factor on which taxable capacity of a nation depends. We cannot single out any factor and say that taxable capacity is determined solely by this factor alone. The fact is that various factors influence taxable capacity and we have to take them all into consideration while judging maximum amount which citizens of a country can pay. We cannot deny this fact that it is quite difficult to measure taxable capacity. But this does not mean we should not make an attempt because it is beset with many difficulties

## Public Debt: Meaning, Objectives and Problems!

### Meaning:

In India, public debt refers to a part of the total borrowings by the Union Government which includes such items as market loans, special bearer bonds, treasury bills and special loans and securities issued by the Reserve Bank. It also includes the outstanding external debt.

However, it does not include the following items of borrowings:

- (i) small savings,
- (ii) provident funds,
- (iii) other accounts, res-erve funds and deposits.

The aggregate borro-wings by the Union Government—comprising the public debt and these other borrowings — are generally known as 'net liabilities of the Government'.

### Objectives:

In India, most government debt is held in long-term interest bearing securities such as national savings certificates, rural development bonds, capital development bonds, etc. In indus-trially advanced countries like the U.S.A., the term government or public debt refers to the accumulated amount of what government has borrowed to finance past deficits.

In such countries the government debt has a very simple relationship to the government deficit the increase in debt over a period (say one year) is equal to its current budgetary deficit. But, in India, the term is used in a different sense.

### The State generally borrows from the people to meet three kinds of expenditure:

- (a) to meet budget deficit,
- (b) to meet the expenses of war and other extraordinary situations and
- (c) to finance development activity.

### (a) Public Debt to Meet Budget Deficit:

It is not always proper to effect a change in the tax system whenever the public expenditure exceeds the public revenue. It is to be seen whether the transaction is casual or regular. If the budget deficit is casual, then it is proper to raise loans to meet the deficit. But if the deficit happens to be a regular feature every year, then the proper course for the State would be to raise further revenue by taxation or reduce its expenditure.

### **(b) Public Debt to Meet Emergencies like War:**

In many countries, the existing public debt is, to a great extent, on account of war expenses. Especially after World War II, this type of public debt had considerably increased. A large portion of public debt in India has been incurred to defray the expenses of the last war.

### **(c) Public Debt for Development Purposes:**

During British rule in India public debt had to be raised to construct railways, irrigation projects and other works. In the post-independence era, the government borrows from the public to meet the costs of development work under the Five Year Plans and other projects. As a result the volume of public debt is increasing day by day.

#### **The Burden of Public Debt:**

When a country borrows money from other countries (or foreigners) an external debt is created. It owes its all to others. When a country borrows money from others it has to pay interest on such debt along with the principal. This payment is to be made in foreign exchange (or in gold). If the debtor nation does not have sufficient stock of foreign exchange (accumulated in the past) it will be forced to export its goods to the creditor nation. To be able to export goods a debtor nation has to generate sufficient exportable surplus by curtailing its domestic consumption.

Thus an external debt reduces society's consumption possibilities since it involves a net subtraction from the resources available to people in the debtor nation to meet their current consumption needs. In the 1990s, many developing countries such as Poland, Brazil, and Mexico faced severe economic hardships after incurring large external debt. They were forced to curtail domestic consumption to be able to generate export surplus (i.e., export more than they imported) in order to service their external debts, i.e., to pay the interest and principal on their past borrowings.

The burden of external debt is measured by the debt-service ratio which returns to a country's repayment obligations of principal and interest for a particular year on its external debt as a percentage of its exports of goods and services (i.e., its current receipt) in that year. In India it was 24% in 1999. An external debt imposes a burden on society because it represents a reduction in the consumption possibilities of a nation. It causes an inward shift of the society's production possibilities curve.

#### **Three Problems:**

When we shift attention from external to internal debt we observe that the story is different.

It creates three problems:

- (1) Distorting effects on incentives due to extra tax burden,
- (2) Diversion of society's limited capital from the productive private sector to unproductive capital sector, and
- (3) Slowing the rate of growth of the economy.

#### **These three problems may now be briefly discussed:**

##### **1. Efficiency and Welfare Losses from Taxation:**

When the government borrows money from its own citizens, it has to pay interest on such debt. Interest is paid by imposing tax on people. If people are required to pay more taxes simply because the government has to pay interest on debt, there is likely to be adverse effects on incentives to work and to save. It may be a happy coincidence if the same individual were tax-payer and a bond-holder at the same time.

But even in this case one cannot avoid the distorting effects on incentives that are inescapably present in the case of any taxes. If the government imposes additional tax on Mr. X to pay him interest, he might work less and save less. Either of the outcome — or both — must be reckoned a distortion from efficiency and well-being. Moreover, if most bond-holders are rich people and most tax-payers are people of modest means repaying the debt money redistributes income (welfare) from the poor to the rich.

### 2. Capital Displacement (Crowding-Out) Effect:

Secondly, if the government borrows money from the people by selling bonds, there is diversion of society's limited capital from the productive private to unproductive public sector. The shortage of capital in the private sector will push up the rate of interest.

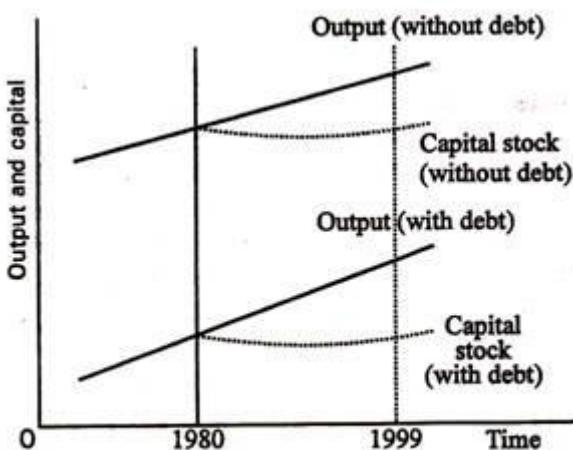
In fact, while selling bonds, the government competes for borrowed funds in financial markets, driving up interest rates for all borrowers. With the large deficits of recent years, many economists have been concerned in the competition for funds; also higher interest rates have discouraged borrowing for private investment, an effect known as crowding out.

This, in its turn, will lead to fall in the rate of growth of the economy. So, decline in living standards is inevitable. This seems to be the most serious consequence of a large public debt. As Paul Samuelson has put it: "Perhaps the most serious consequence of a large public debt is that it displaces capital from the nation's Stock of wealth. As a result, the pace of economic growth slows and future living standards will decline."

### 3. Public Debt and Growth:

By diverting society's limited capital from productive private to unproductive public sector public debt acts as a growth-retarding factor. Thus an economy grows much faster without public debt than with debt.

When we consider all the effects of government debt on the economy, we observe that a large public debt can be detrimental to long-run economic growth. Fig. 22.3 shows the relation between growth and debt. Let us suppose an economy were to operate over time with no debt, in which case the capital stock and potential output would follow the hypothetical path indicated by the solid lines in the diagram.



**Fig. 22.3. Public Debt, Capital Formation and Growth**

Now suppose the government increases a huge deficit and debt; with the accumulation of debt over time, more and more capital is displaced, as shown by the dashed capital line in the bottom of Fig. 22.3. As the government imposes additional taxes on people to pay interest on debt, there are greater inefficiencies and distortions — which reduce output further.

What is more serious is that an increase in external debt lowers national income and raises the proportion of GNP that has to be set aside every year for servicing the external debt. If we now consider all the effects of public debt together, we see that output and consumption will grow more slowly than in the absence of large government debt and deficit as is shown by comparing the top lines in Fig. 22.3.

This seems to be the most important point about the long-run impact of huge amount of public debt on economic growth. To conclude with Paul Samuelson and W. D. Nordhaus: "A large government debt tends to reduce a nation's growth in potential output because it displaces private capital, increases the inefficiency from taxation, and forces a nation to service the external portion of the debt."

#### **Conclusion:**

There is no doubt a feeling among some people that interest payment on the national debt repayment is a drain on the nation's limited economic resources. It is pure waste of our resources to use them to pay interest on the debt.

This argument is wrong because interest payment on the debt — if domestically held — do not prevent a use of economic resources at all. It is, of course, true that if our debt is held by foreigners, we will suffer a loss of resources.

In the case of domestically held (internal) debt, internal payment on the debt involves a transfer of income from Indian taxpayers to Indian bondholders of the same generation. Since, in most cases, taxpayers and bond-holders are different entities, a large national debt inevitably involves income redistribution effects. But internal debt does not involve any using up of the nation's real economic resources.

#### **Limit to Public Debt:**

Though there is no clear end limit to internal debt there should be a definite limit to external debt. Moreover the upper limit to internal debt should be set by the annual rate of growth of per capita GNP.

Points to remember	For quick revision
<b>The costs of the public debt include :</b>	
<ol style="list-style-type: none"> <li>1. The private sector output given up at the time the debt was incurred.</li> <li>2. Lack of constraint on growth of the public sector.</li> <li>3. Higher interest rates, discouraging private investment.</li> <li>4. Externally held debt that must be repaid.</li> <li>5. Problems of income redistribution when the debt is repaid.</li> </ol>	

#### **Assessing the Debt (Optional):**

**What kind of burden does the national debt impose on taxpayers and on future generations?**

One of the most obvious and significant burdens of the national debt is the interest that must be paid to borrow and maintain a debt of this magnitude. The interest burden of the national debt cumulates as additional debt is incurred each year. Because the debt is not being retired, interest must be paid year after year.

The rising burden of the debt service — or interest cost of maintaining the debt — will be passed on to future generations who will have to pay the interest on the current debt. At the same time, however, many of those to whom interest will be paid will be Indian citizens who own government securities.

**Should we pay off the debt?** First of all, it would be a huge, probably impossible, burden, even over several years, to raise, through taxes and other revenues, the amount needed to pay off the debt. Second, with repayment of the debt, a significant income redistribution would occur as the average taxpayer became poorer due to the increased tax burden and the holders of government securities became richer with their newly redeemed funds.

Also, some portion of the debt is external, or foreign-owned. While, under normal conditions, this is not a serious concern, in a period of accelerated repayment it would mean a sizable outflow of rupees from the India. Finally, in order to pay off the public debt, a series of surplus budgets would be needed.

However, as Keynes pointed out, a surplus budget has a contractionary impact on the economy. While the debt was being paid off, economic activity would decline. In short, the opportunity cost of lowering the national debt would be a slowing down of the economic activities.

### **What are the sources of public debt?**

The sources of public debt can be categorized in to two. i. Internal source and ii. External source.

**i. Internal source:** Internal sources is contracted by the government from the residents of the country. The various internal sources from which the government borrows include individuals, banks, business firms, and others. The various instruments of internal debt include market loans, bonds, treasury bills, ways and means advances, etc.

Internal debt is repayable only in domestic currency. It imply a redistribution of income and wealth within the country & therefore it has no direct money burden.

**ii. External debt :**-On the contrary, external source is taken by the government from foreign individuals, institutions and governments. These loans are repayable in foreign currencies. External loans help to take up various developmental programmes in developing and underdeveloped countries. These loans are usually voluntary.

An external loan involves, initially a transfer of resources from foreign countries to the domestic country but when interest and principal amount are being repaid a transfer of resources takes place in the reverse direction.

#### **Burden of Internal Debt:**

It is said that an internal debt has no direct money burden since the interest payment on debt and the imposition of taxation to pay interest to the lenders is simply a transfer of purchasing power from one to another. This means that in case of internal debt, money is borrowed from individuals and institutions within the country.

Repayment (raised from taxation) constitutes just a transfer of resources from one group of persons to another. In other words, these are transfer payments and do not affect the total resources of the community. Truly speaking, government collects money through taxation imposed on the richer people who are also the buyers of government bonds.

That is to say, government collects money from the left pocket and pays it back to the right pocket. Thus, under internal debt, since all payments cancel out each other in the community as a whole, there is no direct money burden.

Above all, money collected from internal source of borrowing is usually spent for various developmental activities. Such expenditure results in transfer of resources in the community and, as a result, aggregate resources of the country increase. Thus, there can be no direct money burden of internal debt.

But there is no denying the fact that internal debt involves direct real burden to the community according to the nature of the series of transfer of incomes from taxpayers to the creditors. If we assume that the taxpayers and bondholders are the same persons then there can be no direct real burden of debt. But we know that the taxpayers and the bondholders belong to different income groups in the community.

Usually, the bondholders are richer people compared to the taxpayers.

Certainly, it is necessary to raise taxation to pay interest on the debt and, the greater the debt, greater the amount of taxation required to provide the interest on it. Ordinarily, taxpayers are poor people. When the government pays interest with principal to the bondholders, it results in the transfer of purchasing power from the poor people to the richer people.

Thus, the payment of internal debt involves redistribution of aggregate income. This results in inequalities in the distribution of income and wealth. This is the direct real burden of debt on the community.

Again, it is argued that taxpayers are generally active people while bondholders are idle, old and inactive ones who live on accumulated wealth. In case of repayment of internal debt, wealth thus gets transferred from the active persons, i.e., taxpayers, to the inactive persons, i.e., bondholders. This certainly adds to the real burden of debt.

Some economists argue that public debt is invariably a burden on the future generation.

They argue that when the government borrows, the present generation escapes the burden. After the loan is repaid at a later date with interest, the future generation has to suffer by being forced to pay additional taxes. In other words, the future generation will suffer when the present generation reduces its savings as disposable income declines following a rise in taxation.

However, there are some people who do not agree with this view. They argue that there is no shifting of the basic burden to the future. According to modern economists, the real burden of governmental activities must be borne during the period in which expenditures are made, since, during this period, only resources are diverted from private to public sector use.

Borrowing method affects the future generations in two ways only. To the extent to which public debt reduces capital formation, the stock of capital goods and the potential level of national income in future generations will be less.

Further, the borrowing methods create some problems for the future generations in the form of adverse effects on the economy from the taxes necessary to pay interest and principal, inflationary or deflationary effects of the existence of the debt, etc. Thus, there is no shifting of the basic burden to the future.

According to J. M. Buchanan, during the period in which the governmental activities and borrowing take place, no burden is created, because burden, by nature, implies a compulsory sacrifice.

Individuals in most cases voluntarily exchange their liquid funds for government bonds. Thus, the present generation does not feel any burden on them. However, it is a burden on the future generations who pay taxes (compulsorily) for the retirement of public debt.

So, we can conclude that the question of shifting the burden of public debt to the posterity or future generation is still an unresolved phenomenon.

#### **Burden of External Debt:**

During a given period, the direct money burden of external debt is the interest payment as well as the principal repayment (i.e., debt servicing) to external creditors. The direct real burden of such external borrowing is measured by the sacrifice of goods and services which these payments involve to the members of the debtor country.

There is also indirect money burden of external debt. Loan repayment by the debtor country implies more exports of goods and services to the creditor country. Thus a debtor country experiences a fall in welfare of the community.

Indirect real burden of external borrowing is crucial. Usually, government imposes taxes to finance external debt. But taxes have disincentive effects. It discourages work-effort and saving. Lower the saving, lower is the capital formation. Thus, external borrowing eats away economic growth since growth largely depends on capital formation. This indirect real burden of external debt is quite similar to internal debt.

Knowing fully well the dangers of borrowing, governments of LDCs are compelled to public borrowing—both from internal and external sources.

#### **Measurement of the Burden of Debt:**

Usually, burden of debt refers to financial burden of the government.

But as it does not indicate true burden, we consider following ratios to estimate the burden of debt:

#### i. Income-Debt Ratio:

It is estimated as:

$$\text{Size of public debt/national income} = D/Y$$

If Y remains at a very high level, the burden of debt, D, will be insignificant. However, if the ratio becomes high, debt then poses a great burden.

#### ii. Debt-Service Ratio:

This ratio is measured as:

$$\text{Annual interest payments of borrowing/National income} = i/Y$$

Increase in Y means lower debt-service ratio. However, taxes are collected for the repayment of public debt. Thus, this ratio indicates the necessity of imposing higher taxes.

#### iii. Debt Service-Tax Revenue Ratio:

It is worked out as:

$$\text{Annual interest payments/Aggregate tax revenue} = i/T$$

An increase of this ratio indicates the financial weaknesses of the government.

#### Fiscal federalism

Fiscal federalism, financial relations between units of governments in a federal government system. Fiscal federalism is part of broader public finance discipline. The term was introduced by the German-born American economist Richard Musgrave in 1959. Fiscal federalism deals with the division of governmental functions and financial relations among levels of government.

The theory of fiscal federalism assumes that a federal system of government can be efficient and effective at solving problems governments face today, such as just distribution of income, efficient and effective allocation of resources, and economic stability. Economic stability and just distribution of income can be done by federal government because of its flexibility in dealing with these problems. Because states and localities are not equal in their income, federal government intervention is needed. Allocation of resources can be done effectively by states and local governments. Musgrave argued that the federal or central government should be responsible for the economic stabilization and income redistribution but the allocation of resources should be the responsibility of state and local governments.

#### The following are benefits of fiscal decentralization:

Regional and local differences can be taken into account; lower planning and administrative costs; competition among local governments favours organizational and political innovations; and more efficient politics as citizens have more influence. There are several disadvantages of fiscal federalism as well: the lack of accountability of state and local governments to constituents; the lack of availability of qualified staff; the possibility for people to choose where to reside; a certain degree of independence of the local governments from the national government; and unavailability of infrastructure of public expenditure at the local level.

Fiscal federalism is affected by the relationship between levels of government and thus by the historical events that shape this relationship. For instance, in the early years of American federalism, geographic separation, slow communication, and clear division of labour made it possible for each level of government to function without significant interactions with other levels. Several developments resulted in more interactions and central planning among the levels of government: improvement in transportation and communication technologies; the New Deal of the 1930s; the World Wars and the Cold War; and the war against poverty from the 1960s. These developments increased the interactions among levels of government and helped the development of national policy making and state and local policy implementation. It also

changed traditional intergovernmental relations. National fiscal policies and financial decisions have been the predominant vehicle forming intergovernmental relations. Fiscal federalism operates through the various federal taxes, grants, and transfers that occur in addition to states and localities. The federal government regulates, subsidizes, taxes, provides goods and services, and redistributes income. In federal systems like that of the United States, fiscal policies have also sought to empower the states through deregulation.

**The five main aspects of fiscals federalism are as follows:**

**(1) Division of Functions:**

The fiscal powers and functional responsibilities in India have been divided between the Central and State government following the principles of federal finance. The division of functions is specified in the Seventh Schedule of the Constitution in three lists vis. the Union List, the State List and the Concurrent List.

The Union List contains 97 subjects of national importance, such as defence, railways, national highways, navigation, atomic energy, and posts and telegraphs. 66 items of State and local interest, such as law and order, public health, agriculture, irrigation, power, rural and community development, etc. have been entrusted to the State governments.

47 items such as industrial and commercial monopolies, economic and social planning, labour welfare and justice, etc. have been enumerated in the Concurrent List. The concurrent list is one in which both state and the centre can make legislations. However, in case of a conflict or tie, federal laws prevail.

**(2) Revenue Powers of the Center:**

The Central government has been given powers in respect of taxes on income other than agricultural income, customs duties, and excise duties on tobacco and other goods manufactured or produced in India, corporation, tax, taxes on capital values, estate duty in respect of property other than agricultural land, terminal taxes on goods or railway passengers carried by railway, sea or air, taxes other than stamp duties on transactions in stock exchanges and futures, markets, stamps duty in respect of land, etc.; taxes on sale or purchase of news papers and on advertisements published therein; and sale, purchase and consignment of goods involving inter-State trade or commerce. In fact, the Central government does not get revenue from all the above taxes.

These revenues can be divided into four categories on the basis of levy, administration and the accrual of revenue as follows:

- (a) Taxes that are levied collected and retained by the Central government: e.g. Corporation Tax, Customs Duties;
- (b) Taxes that are levied and collected by the Centre but shared with the states: e.g. the net proceeds from Union Excise Duties under Article 270 and the net proceeds from Union Excise Duties under Article 272, respectively;
- (c) Taxes that are levied and collected by the centre but whose net proceeds are assigned to the states: e.g. all the eight items under Article 269 of the constitution such as Estate duty, Taxes on Railway Passenger Fares and Freights and Consignment Tax, etc.; and
- (c) Tax levied by the Centre but allocated and appropriated by states, such as exercise duties on medicinal and toilet preparations, etc.

**(3) Revenue Powers of the State:**

The State governments have been given exclusive tax powers in respect of land revenue; taxes on agricultural income; duties in respect of succession to agricultural land; estate duty in respect of agricultural land; taxes on land and buildings; excise duties on goods containing alcoholic liquors for human consumption; opium, Indian hemp and other narcotic drugs; taxes on the entry of goods into local areas; taxes on the sale or purchase of goods other than newspapers; taxes on vehicles, tolls; taxes on professions, trades, callings and employment; capitation taxes, taxes on luxuries including taxes on entertainment, amusements, betting and gambling.

#### (4) Division of Borrowing Powers:

The borrowing powers have also been clearly mentioned in the Constitution. Under Article 292, the central government is empowered to borrow funds from within and outside the country as per the limits imposed by the Parliament. According to Article 293(3), the States can borrow funds within the Country. Article 293(2) empowers the Centre to provide loans to State subject to conditions laid down by Parliament.

#### (5) Fiscal Imbalances in India:

The Constitutional fiscal arrangement shows that fiscal imbalances were deemed inevitable as most of the powers for elastic taxes are given to the Central government. Further, the division of powers and functions itself leads to vertical federal fiscal imbalance while the differences in the endowment position of natural resources across States cause horizontal federal fiscal imbalance.

Visualising the fiscal imbalances, the Constitutional makers provided a mechanism of fiscal adjustment by way of fiscal transfers from the Central to the State Governments. This provision in the Constitution was made under Article 280 by way of setting up of a Finance Commission for every five years or earlier, if the President of India feels it necessary.

#### Financial Relations between Centre and State (Art. 268 to 293)

The Indian Constitution has elaborate provisions regarding the distribution of revenues between the Union and the States.

**Article 268 to 293 in Part XII deal with the financial relations.** The financial relations between the Union and the States can be studied under the following heads:

Taxes and duties levied by the Union, but collected and appropriated by the States: Stamp duties and duties of excise on medical and toilet preparations are levied by the Government of India, but collected and appropriated by the States, within which such duties are leviable, except in the Union Territories, where they are collected by the Union Government (Art. 268). The proceeds of these duties levied within any State are assigned to that State only and do not form a part of Consolidated Fund of India.

Service tax levied by the Centre, but collected and appropriated by the Centre and the States: Taxes on services are levied by the Centre, but their proceeds are collected and appropriated by both the Centre and the States. Principles of their collection and appropriations are formulated by the Parliament.

Taxes levied and collected by the Union, but assigned to the States within which they are leviable (Art.269):

- Succession duty in respect of property, other than agricultural land.
- Estate duty in respect of property, other than agricultural land.
- Terminal taxes on goods or passengers carried by railways, sea or air.
- Taxes on railway fares and freights taxes on transactions in Stock Exchanges.

Taxes levied and collected by the Union and distributed between the Union and the States (Art.270): Certain taxes are levied as well as collected by the Union, but their proceeds are divided between the Union and the States in a certain proportion in order to effect an equitable distribution of the financial resources.

This category includes all the taxes and duties referred to in the Union List, except the three categories mentioned above, any surcharge and any cess levied for specific purposes. The manner of distribution of net proceeds of these taxes is prescribed by the President, on the recommendation of the Finance Commission.

**Surcharge on certain taxes (Art.271):** The Parliament is, authorized to levy surcharge on the taxes mentioned in the above two categories (Art.369 and Art.370) and the proceeds of such surcharges go to the Centre exclusively and are not shareable.

**Taxes levied and collected and retained by the states:** These are the taxes enumerated in the State List (20 in number) and belong to the States exclusively.

**Grants-in-Aid:** The Parliament may make grants-in-aid from the Consolidated Fund of India to such States as are in need of assistance (Art.275), particularly for the promotion of welfare of tribal areas, including special grant to Assam.

These are called statutory grants and made on the recommendation of the Finance Commission. Apart from this, Art.282 provides for discretionary grants by the Centre and States both, for any public purposes. The Centre makes such grants on the recommendation of the Planning Commission (an extra-constitutional body).

**Loans:** The Union Government may provide loan to any State or give guarantees with respect to loans raised by any State.

**Previous sanction of the President (Art 274):** No Bill or amendment can be introduced or moved in either House of Parliament without the previous sanction of the President, if:

It imposes or varies any tax in which the States are interested; or

It varies the meaning of the expression "Agricultural Income" as defined in the Indian Income-Tax Act; or

It affects the principles on which money are distributed to the States; or

It imposes a surcharge on the State taxes for the purpose of the Union.

**According to Article 301, Freedom of Trade, Commerce and Intercourse throughout the territory of India is guaranteed, but Parliament has the power to impose restrictions in public interest.**

Although taxes on income, other than agricultural income, are levied by the Union, yet the State Legislatures can levy taxes on profession, trade, etc.

**Distribution of non-tax revenues:** Non tax revenues from post and telegraph, railways, banking, broadcasting, coinage and currency, central public sector enterprises and escheat (death of a person without heir) and lapse (termination of rights) go to the Centre, while State receives non-tax revenues from irrigation, forests, fisheries, state public sector enterprises and escheat and lapse (if property is situated in that state).

Provision has been made for the constitution of a Finance Commission to recommend to the President certain measures for the distribution of financial resources between the Union and the States (Art.280).

Under the situation of emergencies, these financial relations also undergo changes according to the situation and the President can modify the constitutional distribution of revenues between the Centre and the States.

### What is fiscal policy?

Fiscal policy is the use of government revenue collection (mainly taxes but also non tax revenues such as divestment, loans) and expenditure (spending) to influence the economy.

**Fiscal policy thus contains essentially two components-**

**Revenue Collection- (primarily taxation)- Govt collect taxes which are of two types**

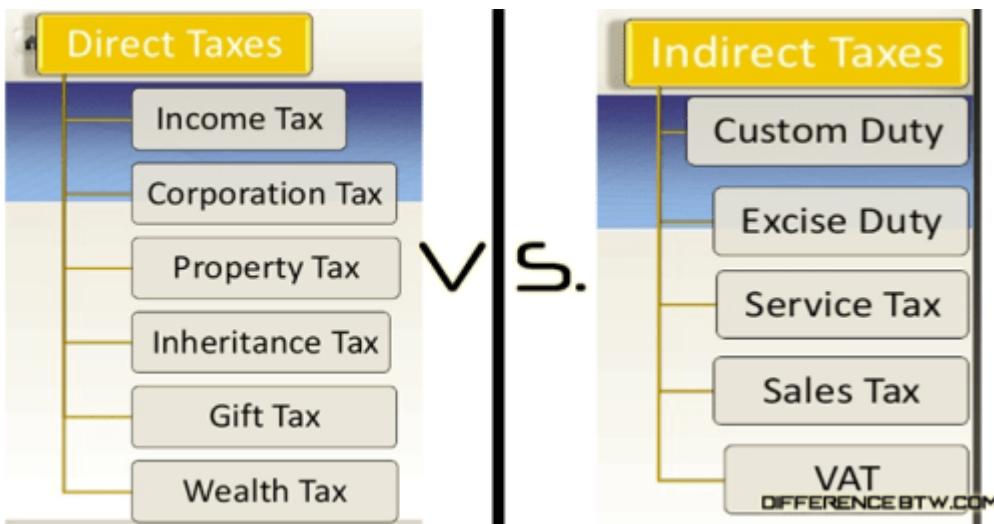
**1. Direct tax** -A direct tax is generally a tax paid directly to the government by the person on whom it is imposed. Eg-. Income tax<your income, you pay tax>, corporation tax<Corporate profits, they directly pay tax>, wealth tax<your wealth, you directly pay tax>, capital gains tax<value of your asset increases, you pay tax>, securities transaction tax<you trade, you pay>

**2. Indirect tax**-An indirect tax is indirectly paid by consumers. Govt taxes goods and services # manufacturer/ seller/ service provider pay the taxes # he increases the prices to recover taxes # indirectly consumers end up paying taxes. In effect, tax is shifted from one taxpayer to another, by way of an increase in the price of the goods and services. Eg. Excise duty<union tax on manufacturing>, custom duty<union tax on imports and exports>, service tax<union tax on services>, sales tax or VAT<state level tax on sale of goods, that's why price of petrol is different in all the states>, central sales tax<tax levied by union but given to states on interstate movement of goods>

**Q. What Is Minimum Alternative Tax (MAT)? Is it a direct or indirect tax? What is the rationale for imposing it?**

Indirect tax is generally considered regressive in nature as tax remains the same no matter how much you earn. So, for instance, if tax on diesel is 20%, a poor farmer would have to pay the same tax to run his tube-well as Ambani has to pay to drive his Audi. On the other hand, in direct taxes, less you earn, less you have to pay <Brackets in income tax>.

Of course, governments try to make indirect tax structure a bit less regressive by taxing luxury products more. For instance, taxes on SUVs are higher than taxes of small cars. Also, govt by way of higher taxes try to shift consumption away from some product such as cigarette, tobacco etc. <sin tax>.



**What would happen if govt increased taxes?**

When government increases taxes, it basically leaves less money in the hands of people # less money # less consumer demand # apply demand supply principle # less demand for goods # prices fall # corporate will delay investment # job loss # slowdown in the economy

As we saw when RBI raises rates or sucks out liquidity through open market sales of government securities, it tightens money supply and reduces demand resulting in prices fall. It is said to be following dear or contractionary monetary policy.

Similarly when government raises taxes, it reduces consumption demand and it is known as contractionary fiscal policy. On the other hand when government slashes rates to stimulate consumption to kick start the economy, it is known as expansionary fiscal policy.

**Expenditure (spending)-** Government spend money which also provides demand to the economy. If government decides to spend more by borrowing, it increases aggregate demand and it is known as expansionary fiscal policy.

Basically **contractionary policy-** increase taxes, slash spending is followed when inflation is high to bring down demand and thus cool down prices and expansionary policies to pump prime the economy by creating the demand through decreased taxes and higher spending.

Estimates of spending and taxation are presented in budget which also mentions various deficits like fiscal deficit, revenue deficit, effective revenue deficit. Want to know more about them, click [here](#)

**Plan v/s non plan expenditure**

**Plan expenditure-** expenditure on schemes and projects covered by the five-year Plans (road construction, railway line construction etc.)

**Non-plan expenditure:** Ongoing expenditure by the government not covered by the Plans <routine expenditure to run the govt>. Eg. Interest payment, Subsidies, salaries, pension, defense expenditure etc.

Please note that bot plan and non plan expenditure includes revenue and capital expenditure. It's not that the plan expenditure is equivalent to capital expenditure while non plan is revenue expenditure. To know the difference b/w revenue and capital expenditure, click here

#### **Q. Plan v/s non plan classification of expenditure should be scrapped. Comment.**

Budget is an important part of fiscal policy as revenue and expenditure statements are presented during the budget. Let's understand in brief, where all the revenue comes from and where all the money goes.

We can clearly see, among non debt creating receipts (not borrowings), maximum earning is from corporate tax followed by income tax.

Always remember these facts on revenue and expenditure side by heart

direct taxes > Indirect taxes

Corporate tax > Income tax > Excise > Service tax > custom

Non plan expenditure > Plan expenditure (more than double)

Interest payment >> subsidies and defense <subsidies and defense are almost equal. Every year including this year defense is budget higher amount but eventually, subsidies turn out to be higher during revised estimates>

Food subsidies >> Fertilizer subsidies >> Fuel subsidies

When government reduces its fiscal deficit, it is known as fiscal consolidation. Learn everything about fiscal consolidation here

Clearly it can be achieved in two ways, reduce spending or increase taxes or combination of two. Here we discuss one component of spending known as subsidy in some detail. Everyday we read about subsidy rationalization, cutting or increasing subsidies and passionate arguments on both sides.

#### **So, What is subsidy?**

In a layman's term, it can be understood as converse of a tax in that using taxation government takes money from consumers while subsidy in effect transfer money from government to consumers.

For instance, taxes on grain would increase their market price from say 10 rs a kg to 12 rs a kg, in effect taking 2 rs from you for every kg of grain you buy. On the other hand subsidy under PDS would reduce price of grain from 10 rs to say 2rs in effect transferring 8 rs to your pocket. In this way, they are converse of indirect taxes.

When government directly transfers money in your bank account without any condition i.e. unconditional direct benefit transfer, subsidy becomes converse of direct taxes.

In India government (central and state) subsidize a lot of things from food to fertilizer to kerosene and LPG etc. Tax concessions can also be considered as implicit subsidy. Subsidies increase government spending and thus puts pressure on government finances.

#### **So what's the rationale for subsidy?**

Like indirect taxes, subsidies can alter relative prices and budget constraints and thereby affect decisions concerning production, consumption and allocation of resources.

#### **So purpose of subsidies is two fold-**

Increasing consumption of items government considers important such as health, education, nutritious food etc or renewable energy in modern times.

Redistributive effect i.e. to provide minimum level of protection to the poor <welfare function, tax the rich, distribute in poor>

For objective one to be fulfilled government should subsidize merit goods.

### **What are merit goods?**

A good which would be under-consumed (and under-produced) in the free market economy

### **why are they under-consumed?**

They are associated with positive externality i.e. they also benefit public but since consumers and producers will take account of only private benefits, they are likely to consume less than desired. For instance, consider education, not only a person is educated and earns more <private benefit> but more productive individual would also benefit society in the form of higher taxes <societal benefit>

For objective two (redistribution) to be achieved, subsidies should be well targeted i.e. reach the poor with minimal leakages. This requires proper targeting without which there would be inclusion errors (rich getting subsidy and exclusion errors (poor not getting subsidy). Exclusion errors are the worst since they directly affect the poor <kerosene meant for poor not reaching him, how will she light her house>

**Subsidy rationalisation** is the process of better targeting to weed out unintended beneficiaries as well as phasing out subsidies on non merit goods.

So, what are the adverse consequences of bad subsidies (non merit, not well targeted)?

Fiscal effects- directly increase fiscal deficit and thus total government debt <10% of total govt spending is for subsidies> <While golden rule of borrowing is, borrow to invest>

Allocative effects- result in inefficient resource allocation <producers will produce more of subsidized good even when not required>

perverse distributional effects endowing greater benefits on the better off people <subsidized diesel being used to run SUVs>

Shortages and black marketing <subsidized urea being diverted to non agricultural uses, scarcity leading to black marketing harms the poorest farmers the most>

**Tendency to self-perpetuate.** They create vested interests and acquire political hues <Exit problem discussed in economic survey chapter two, click here to read>

For instance, High MSP for wheat and rice and subsidized water and electricity illustrates all such effects, an example of bad bad subsidy.

Perverse distributional effects- better off farmers of Punjab and Haryana getting benefited<no procurement from eastern belt, poor farmers of Bihar, Jharkhand not getting benefits>

**Fiscal effects-** finances of central as well as state govt getting stretched, discoms in debt <high deficit # high debt # high interest cost # high deficit = vicious circle>

**Allocative effects-** pulses and oilseeds are not grown resulting in shortages <procurement only of grains, no incentive to produce pulses>

environmental effect- water table going down, soil getting salty and arid

Health effect- Groundwater pollution due to high fertilizer use, burning of husks resulting in air pollution

How subsidies distort the market (in a comical way) is best understood by Railway subsidies <Example from last year's economic survey>

Govt subsidizes passenger fares resulting in losses. Railways cannot generate sufficient internal resources to finance capacity expansion investments; Result- Trains always run late, very slow services, whole economy becomes unproductive

Of course the passenger fare is cross subsidized by high freight tariffs. It results in diversion of freight traffic to road transport which is costlier. Result- not only financial and efficiency costs but also acute costs associated with emissions, traffic congestion, and road traffic accident (RTA) <And we all know passengers on two wheeler or those walking die the most in the RTA i.e. poorer segments of society>

High freight cost raises the cost of manufactured goods that all households, including the poor, consume. <subsidized passenger fare but costly goods, no one knows who gains who losses but these distortions decreases the overall efficiency and thus whole economy suffers.>

### **What's the solution?**

End perverse subsidies while investing in state capacity to deliver basic goods and merit goods such as health, education, skills etc. Incentivize research and development, environment friendly technologies etc. Borrow only to invest. Adhere to FRBM targets of zero revenue deficit.

Direct Benefit Transfer (DBT) using JAM number trinity, read the economic survey chapter here

JanDhan i.e. Bank accounts, Aadhar i.e. biometric identification and mobile i.e. mobile banking

It will result in direct transfer of money to bank account of beneficiaries and cut down leakages as intermediaries are removed.

Biometric authentication will remove ghost accounts i.e. same person getting subsidy twice from two different names.

Mobile banking will give access to bank accounts for easy deposit and withdrawal

But problem of identification of beneficiaries still remains and it requires better and more robust data collection, publishing names of beneficiaries at gram panchayat level for people to raise objections, jan sunwai (public hearing), social audits and such transparency mechanisms

### **Pitfalls of DBT**

Where transfers are unconditional, people may just spend money on desi liquor <objective of changing consumption pattern defeated>. For instance, if govt transferred 6000 rs to every pregnant women it's possible that money will go in the bank account of husband and instead of better nutrition for pregnant lady, he will buy desi liquor.

Solution- transfer money in the hand of oldest woman and provide her information so that she can take informed decision in the best interest of family

Conditional transfers might give rise to its own kind of corruption. For instance if money is transferred for check up by a nurse, she might demand bribe for certifying you indeed showed up for check up.

Private market may not exist for people to buy goods and services from the market. For instance, if PDS shops are closed, where would people buy ration from?

Banking infrastructure poor <as we saw in the JAM article, last mile banking access is jamming the JAM>

Real value of subsidy amount will be eroded with inflation. Solution- link subsidy with CPI inflation. But generally food inflation higher than CPI, then what?

There is concern that biometric fingerprinting may not work for rural manual labourers.

What happens to corporate tax breaks and subsidies going to not so poor?

Government decision to phase out corporate tax exemption while simultaneously bringing down tax rates down to 25% level is welcome in this regard.

It will remove major distortions and end favours to select few corporate groups

Government should rationalize subsidies so they are targeted better and use money thus made available to invest in physical and social infrastructure. In this way by rationalizing subsidies government can bring down fiscal deficit and overall debt level. Bringing fiscal deficit under control, reduces aggregate demand, this cooling down prices.

### Compensatory Fiscal Policy

JM Keynes recommended compensatory fiscal policy to counter recession. During recession, private expenditure in the form of consumption and investment may decline due to the operation of some adverse factors. This decline in aggregate demand will reduce consumption, investment, employment etc, leading to down turn and recession in the economy. In this juncture, effort by the government through additional expenditure (and reduced taxes) will fill the gap in demand, consumption and investment. The main thrust of compensatory fiscal policy thus is that the government should inject extra expenditure to reinstate demand. In effect, the government expenditure was able to compensate for reduced private expenditure. This fiscal policy is called compensatory fiscal policy. Contra cyclical fiscal policy is to counter business cycles.

### What is functional finance in economics?

This refers to an economic theory which hopes to put an end to business cycles through appropriate government policy. It was developed by British economist Abba P. Lerner during the Second World War. Lerner proposed that the taxation, borrowing and spending decisions of the government be actively targeted at upholding economic growth and controlling inflation while ignoring other concerns. For instance, a government that hopes to boost growth by increased spending and cutting taxes should worry only about the policy's effect on growth, not about the rise in debt due to such a policy.

## UNIT-5

# INTERNATIONAL ECONOMICS

### **Introduction to theories of International Trade:**

#### **Some important theories of International Trade:**

##### **1. Absolute Cost Advantage Theory**

The principle of absolute advantage refers to the ability of a party (an individual, or firm, or country) to produce a greater quantity of a good, product, or service than competitors, using the same amount of resources. Adam Smith first described the principle of absolute advantage in the context of international trade, using labor as the only input. Since absolute advantage is determined by a simple comparison of labor productiveness, it is possible for a party to have no absolute advantage in anything; in that case, according to the theory of absolute advantage, no trade will occur with the other party.

#### **Assumptions of the Theory:**

- 1. Trade is between two countries**
- 2. Only two commodities are traded**
- 3. Free Trade exists between the countries**
- 4. The only element of cost of production is labour.**

Smith argued that it was impossible for all nations to become rich simultaneously by following mercantilism because the export of one nation is another nation's import and instead stated that all nations would gain simultaneously if they practiced free trade and specialized in accordance with their absolute advantage. Smith also stated that the wealth of nations depends upon the goods and services available to their citizens, rather than their gold reserves. While there are possible gains from trade with absolute advantage, the gains may not be mutually beneficial.

Smith reasoned that trade between countries shouldn't be regulated or restricted by government policy or intervention. He stated that trade should flow naturally according to market forces. In a hypothetical two-country world, if Country A could produce a good cheaper or faster (or both) than Country B, then Country A had the advantage and could focus on specializing on producing that good. Similarly, if Country B was better at producing another good, it could focus on specialization as well. By specialization, countries would generate efficiencies, because their labor force would become more skilled by doing the same tasks. Production would also become more efficient, because there would be an incentive to create faster and better production methods to increase the specialization.

Smith's theory reasoned that with increased efficiencies, people in both countries would benefit and trade should be encouraged. His theory stated that a nation's wealth shouldn't be judged by how much gold and silver it had but rather by the living standards of its people.

##### **2. Comparative Advantage:**

**David Ricardo** developed the classical theory of comparative advantage in **1817** to explain why countries engage in international trade even when one country's workers are more efficient at producing every single good than workers in other countries.

Comparative advantage refers to the ability of a party to produce a particular good or service at a lower marginal and opportunity cost over another. Even if one country is more efficient in the production of all goods (absolute advantage in all goods) than the other, both countries will still gain by trading with each other, as long as they have different relative efficiencies. For example, if, using machinery, a worker in one

country can produce both shoes and shirts at 6 per hour, and a worker in a country with less machinery can produce either 2 shoes or 4 shirts in an hour, each country can gain from trade because their internal trade-offs between shoes and shirts are different. The less-efficient country has a comparative advantage in shirts, so it finds it more efficient to produce shirts and trade them to the more-efficient country for shoes. The net benefits to each country are called the gains from trade.

### 3. Ohlin Heckler Theory

**The Heckscher** – Ohlin theory is based on most of the assumptions of the classical theories of international trade and leads to the development of two important theorems –

- (a) Heckscher – Ohlin theorem and
- (b) Factor price equalization theorem.

### 4. The Product Life-Cycle Theory

1960's, **Raymond Vernon** – attempts to explain global trade patterns. First, new products are introduced in the United States. Then, as demand grows in the U.S., it also appears in other developed nations, to which the U.S. exports. Then, other developed nations begin to produce the product as well, thus causing U.S. companies to set up production in those countries as well, and limiting exports from the U.S. Then, it all happens again, but this time production comes online in developed nations. Ultimately, the U.S. becomes an importer of the product that was initially introduced within its borders.

Weakness – Not all new products are created in the United States. Many come from other countries first, such as video game consoles from Japan, new wireless phones from Europe, etc. Several new products are introduced in several developed countries simultaneously

### 5 . New Trade Theory

1970's – Via the achievement of economies of scale, trade can increase the variety of goods available to consumers and decrease the average cost of those goods. Further, the ability to capture economies of scale before anyone else is an important first-mover advantage.

Nations may benefit from trade even when they do not differ in resource endowments or technology

Example – If two nations both want sports cars and minivans, but neither can produce them at a low enough price within their own national markets, trade can allow each to focus on one product, allowing for the achievement of economies of scale that will increase the variety of products in both countries at low enough prices

Example – Airbus spent \$14 billion to develop a new super-jumbo jet. Demand is estimated at 400-600 units over the next 20 years, and Airbus will need to sell at least 250 of them to become profitable in this line of business. Boeing estimates the demand to be much lower, and has chosen not to compete. Airbus will have the first mover advantage in this market, and may never see competition in this market segment.

New trade theory is not at odds with Comparative Advantage, since it identifies first mover advantage as an important source of comparative advantage

Debate – should government provide subsidies that spawn industries such that companies can gain first mover advantages? Later chapter (and blog post) covers this.

### 6. National Competitive Advantage – Porter's Diamond

**1990, Michael Porter** – seeks to answer the question of why a nation achieves international success in a particular industry. Based on four attributes:

#### Factor endowments

Basic factors – natural resources, climate, location, demographics

Advanced factors – communication infrastructure, sophisticated and skilled labor, research facilities, and technological know-how

Advanced factors are a product of investment by individuals, companies, and governments

Porter argues that advanced factors are the most significant for competitive advantage

Demand conditions – if customers at home are sophisticated and demanding, companies will have to produce innovative, high quality products early, which leads to competitive advantage

Relating and supporting industries – If suppliers or related industries exist in the home country that are themselves internationally competitive, this can result in competitive advantage in the new industry.

Firm strategy, structure, and rivalry

Different nations are characterized by different management ideologies, which can either help or hurt them in building competitive advantage

If there is a strong domestic rivalry, it helps to create improved efficiency, making those firms better international competitors

Porter also notes that chance (such as new breakthrough innovations) and government policies (such as regulation, investments in education, etc.) can influence the “national diamond”

### **IMPERFECT COMPETITION:**

The concept of imperfect competition was propounded in 1933 in England by Mrs. Joan Robinson and in America by E.H. Chamberlin.

It is an important market category where the individual firms exercise their control over the price to a smaller or larger degree. Prof. Chamberlin called it “Monopolistic competition”.

Under imperfect competition, there are large number of buyers and sellers. Each seller can follow its own price-output policy. Each producer produces the differentiated product, which are close substitutes of each other. Thus, the demand curve under monopolistic competition is highly elastic.

#### **Characteristics:**

##### **1. Large number of Sellers and Buyers:**

There are large numbers of sellers in the market. All these firms are small sized. It means that each firm produces or sells such an insignificant portion of the total output or sale that it cannot influence the market price by its individual action. No firm can affect the sales of any other firm either by increasing or reducing its output; so there is no reaction from other firms. Every firm acts independently without bothering about the reactions of its rivals. There are a large number of buyers and none of them can affect price by his individual action.

##### **2. Product Differentiation:**

Another important characteristic is product differentiation. The product of each seller may be similar to, but not identical with the product of other sellers in the industry. For example, a packet of Verka butter may be similar in kind to another packet of Vita butter, but because of the idea that there are differences, real or imaginary, in the quality of these two products, each buyer may have a definite preference for the one rather than for the other. As a result, each firm will have a group of buyers who prefer, for one reason or another, the product of that particular firm.

##### **3. Selling Costs:**

Another important characteristic of the monopolistic competition is existence of selling costs. Since there is product differentiation and products are close substitutes, selling costs are important to persuade buyers to change their preferences, so as to raise their demand for a given article. Under monopolistic competition,

advertisement is not only persuasive but also informative because a large number of firms are operating in the market and buyer's knowledge about the market is not perfect.

#### **4. Free Entry and exit of Firms:**

Firms under monopolistic competition are free to join and leave the industry at any time they like to. The implication of this characteristic is that by entering freely into the market, the firms can produce close substitutes and increase the supply of commodity in the market. Similarly, the firm commands such a meager amount of resources that in the event of losses, they may easily quit the market.

#### **5. Price-makers:**

In the monopolistic competitive market, each firm is a price-maker as it can determine the price of its own brand of the product.

#### **6. Blend of Competition and Monopoly:**

In this market, each firm has a monopoly power over its product as it would not lose all customers if it raises the price as its product is not perfect substitute of other brands. At the same time, there is an element of competition because the consumers treat the different firms' products as close substitutes. Hence, if a firm raises the price of its brand, it would lose some customers to other brands.

#### **Meaning**

**Terms of trade (TOT)** refers to the relative price of exports in terms of imports and is defined as the ratio of export prices to import prices. It can be interpreted as the amount of import goods an economy can purchase per unit of export goods.

#### **Types of TOT**

##### **Commodity or Net Barter Terms of Trade**

The commodity or net barter terms of trade is the ratio between the price of a country's export goods and import goods. Symbolically, it can be expressed as:

$$Tc = P_x/P_m$$

Where  $Tc$  stands for the commodity terms of trade,  $P$  for price, the subscript  $x$  for exports and  $m$  for imports.

To measure changes in the commodity terms of trade over a period, the ratio of the change in export prices to the change in import prices is taken. Then the formula for the commodity terms of trade is

$$Tc = P_{x1}/P_{x0} / P_{m1}/P_{m0}$$

Where the subscripts 0 and 1 indicate the base and end periods.

Taking 1971 as the base year and expressing India's both export prices and import prices as 100, if we find that by the end of 1981 its index of export prices had fallen to 90 and the index of import prices had risen to 110. The terms of trade had changed as follows:

$$Tc = 90/100 / 110/100 = 81.82$$

It implies that India's terms of trade declined by about 18 per cent in 1981 as compared with 1971, thereby showing worsening of its terms of trade.

If the index of export prices had risen to 180 and that of import prices to 150, then the terms of trade would be 120. This implies an improvement in the terms of trade by 20 per cent in 1981 over 1971.

The concept of the commodity or net barter terms of trade has been used by economists to measure the gain from international trade. The terms of trade, as determined by the offer curves in the Mill-Marshall analysis, are related to the commodity terms of trade.

#### **Its Limitations::**

- 1. Problems of Index Numbers:** Usual problems associated with index number in terms of coverage, base year and method of calculation arise.
- 2. Change in Quality of Product:** The commodity terms of trade are based on the index numbers of export and import prices. But they do not take into account changes taking place in the quality and composition of goods entering into trade between two countries. At best, commodity terms of trade index shows changes in the relative prices of goods exported and imported in the base year. Thus the net barter terms of trade fail to account for large change in the quality of goods that are taking place in the world, as also new goods that are constantly entering in international trade.
- 3. Problem of Selection of Period:** Problem arises in selecting the period over which the terms of trade are studied and compared. If the period is too short, no meaningful change may be found between the base date and the present. On the other hand, if the period is too long, the structure of the country's trade might have changed and the export and import commodity content may not be comparable between the two dates.
- 4. Causes of Changes in Prices:** Another serious difficulty in the commodity terms of trade is that it simply shows changes in export and import prices and not how such prices change. As a matter of fact, there is much qualitative difference when a change in the commodity terms of trade index is caused by a change in export prices relative to import prices as a result of changes in demand for exports abroad, and ways or productivity at home. For instance, the commodity terms of trade index may change by a rise in export prices relative to import prices due to strong demand for exports abroad and wage inflation at home. The commodity terms of trade index does not take into account the effects of such factors.
- 5. Neglect of Import Capacity:** The concept of the commodity terms of trade throws no light on the "capacity to import" of a country. Suppose there is a fall in the commodity terms of trade in India. It means that a given quantity of Indian exports will buy a smaller quantity of imports than before. Along with this trend, the volume of Indian exports also rises, may be as a consequence of the fall in the prices of exports. Operating simultaneously, these two trends may keep India's capacity to import unchanged or even improve it. Thus the commodity terms of trade fails to take into account a country's capacity to import.
- 6. Ignores Productive Capacity:** The commodity terms of trade also ignores a change in the productive efficiency of a country. Suppose the productive efficiency of a country increases. It will lead to a fall in the cost of production and in the prices of its export goods
- 7. Not Helpful in Balance of Payment Disequilibrium:** The concept of commodity terms of trade is valid if the balance of payments of a country includes only the export and imports of goods and services, and the balance of payments balances in the base and the given years. If the balance of payments also includes unilateral payments or unrequired exports and/or imports, such as gifts, remittances from and to the other country, etc., leading to disequilibrium in the balance of payments, the commodity terms of trade is not helpful in measuring the gains from trade.
- 8. Ignores Gains from Trade:** The concept of commodity terms of trade fails to explain the distribution of gains from trade between a developed and underdeveloped country. If the export price index of an underdeveloped country rises more than its import price index, it means an improvement in its terms of

trade. But if there is an equivalent rise in profits of foreign investments, there may not be any gain from trade.

**To overcome this last difficulty, Taussig introduced the concept of the gross barter terms of trade.**

### Gross Barter Terms of Trade

The gross barter terms of trade is the ratio between the quantities of a country's imports and exports. Symbolically,

$$Tg = Qm/Qx,$$

Where Tg stands for the gross terms of trade, Qm for quantities of Imports and Qx for quantities of exports.

The higher the ratio between quantities of imports and exports, the better the gross terms of trade. A larger quantity of imports can be had for the same volume of exports.

To measure changes in the gross barter terms of trade over a period, the index number of the quantities of imports and exports in base period and the end period are related to each other. The formula for this is:

$$Tg = Qm_1 / Qm_0 / Qx_1 / Qx_0$$

Taking 1971 as the base year and expressing India's both quantities of imports and exports as 100, if we find that the index of quantity imports had risen to 160 and that of quantity exports to 120 in 1981, then the gross barter of trade had changed as follows:

$$Tg = 160/100 / 120/100$$

It implies that there was an improvement in the gross barter terms of trade of India by 33 per cent in 1981 as compared with 1971. If the quantity of import index had risen by 130 and that of quantity exports by 180, then the gross barter terms of trade would be 72.22.

$$Tg = 130/100 / 180/100$$

This implies deterioration in the terms of trade by 18 per cent in 1981 over 1971. When the net barter terms of trade equal the gross barter terms of trade , the country has balance of trade equilibrium. It shows that total receipts from exports of goods equal total payments for import goods. Numerically:

$$Px \times Qx = Pm \times Qm$$

$$\text{or } Px / Pm = Qm / Qx$$

$$\text{or } Tc = Tg$$

### Its Criticisms:

**1. Aggregating Goods, Services and Capital Transactions:** The concept of gross barter terms of trade has been criticised for lumping together all types of goods and capital payments and receipts as one category in the index numbers of exports and imports. No units are applicable equally to rice and to steel, or to export (or import) of capital and the payment (or receipt) of a grant. It is therefore, not possible to distinguish between the various types of transactions which are lumped together in the index. Haberler, Viner and other economists have, therefore, dismissed this concept as unreal and impracticable as a statistical measure.

**2. Ignores Factor Productivity:** This concept ignores the effect of improvement in factor productivity on the terms of trade of a country. A country may have unfavorable gross barter terms of trade due to increase in factor productivity in the export sector. This increased factor productivity, in turn, reflects the gain for the exporting country.

**3. Neglects Balance of Payments:** The concept of gross barter terms of trade relates to the trade balance and ignores the influence of international capital receipts and payments of a trading country.

**4. Ignores Improvements in Production:** This concept measures the terms of trade in terms of physical quantities of exports and imports but ignores qualitative improvements in the production of exportable and importable goods.

**5. Not True Index of Welfare:** An improvement in gross barter terms of trade is regarded as an index of a higher level of welfare from trade. For the country exchanges more importable goods for its exportable goods. But this may not be true if tastes, preferences and habits of the people change so that the country needs less importables which yield greater satisfaction to the people. It will lead to unfavourable gross barter terms of trade but improve welfare.

**Conclusion:** Due to the above noted limitations, Viner uses only the concept of net barter terms of trade while other writers use only the export-import price ratio as the commodity terms of trade. So this concept has been discarded by economists.

#### Income Terms of Trade

**Dorrance** has improved upon the concept of the net barter terms of trade by formulating the concept of the income terms of trade. This index takes into account the volume of exports of a country and its export and import prices (the net barter terms of trade). It shows a country's changing import capacity in relation to changes in its exports.

Thus, the income terms of trade is the net barter terms of trade of a country multiplied by its export volume index.

It can be expressed as

$$Ty = Tc \cdot Qx = Px \cdot Qx / Pm = \text{Index of Export Prices} \times \text{Export Quantity} / \text{Index of Import Prices}$$

Where Ty is the income terms of trade, Tc the commodity terms of trade and Qx the export volume index.

A.H. Imlah calculates this index by dividing the index of the value of exports by an index of the price of imports. He calls it the "Export Gain from Trade Index."

Taking 1971 as the base year, if

$$Px = 140, Pm = 70 \text{ and } Qx = 80 \text{ in 1981,}$$

$$\text{then } Py = 140 \times 80 / 70 = 160$$

It implies that there is improvement in the income terms of trade by 60 per cent in 1981 as compared with 1971.

If in 1981, Px = 80, Pm = 160 and Qx = 120, then

$$Py = 80 \times 120 / 160 = 60$$

It implies that the income terms of trade have deteriorated by 40 per cent in 1981 as compared with 1971. A rise in the index of income terms of trade implies that a country can import more goods in exchange for its exports. A country's income terms of trade may improve but its commodity terms of trade may deteriorate. Taking the import prices to be constant, if export prices fall, there will be an increase in the sales and value of exports. Thus while the income terms of trade might have improved, the commodity terms of trade might have deteriorated.

The income terms of trade is called the capacity to import. In the long-run, the total value of exports of a country must equal to its total value of imports, i.e.,  $P_x.Q_x = P_m.Q_m$  or  $P_x.Q_x/P_m = Q_m$ .

Thus  $P_x.Q_x/P_m$  determines  $Q_m$  which is the total volume that a country can import. The capacity to import of a country may increase if other things remain the same (i) the price of exports ( $P_x$ ) rises, or (if) the price of imports ( $P_m$ ) falls, or (Hi) the volume of its exports ( $Q_x$ ) rises. Thus the concept of the income terms of trade is of much practical value for developing countries having low capacity to import

#### **Single Factoral Terms of Trade:**

The concept of commodity terms of trade does not take account of productivity changes in export industries. Prof. Viner had developed the concept of single factorial terms of trade which allows changes in the domestic export sector. It is calculated by multiplying the commodity terms of trade index by an index of productivity changes in domestic export industries. It can be expressed as:

$$T_s = T_c \cdot F_x = P_x \cdot F_x / P_m$$

Where  $T_s$  is the single factorial terms of trade,  $T_c$  is the commodity terms of trade, and  $F_x$  is the productivity index of export industries.

#### **It's Criticisms:**

**1. Fails to Measure Gain or Loss from Trade:** The index of income terms of trade fails to measure precisely the gain or loss from international trade. When the capacity to import of a country increases, it simply means that it is also exporting more than before. In fact, exports include the real resources of a country which can be used domestically to improve the living standard of its people.

**2. Not Related to Total Capacity to Import:** The income terms of trade index is related to the export based capacity to import and not to the total capacity to import of a country which also includes its foreign exchange receipts. For example, if the income terms of trade index of a country have deteriorated but its foreign exchange receipts have risen, its capacity to import has actually increased, even though the index shows deterioration.

**3. Inferior to Commodity Terms of Trade:** Since the index of income terms of trade is based on commodity terms of trade and leads to contradictory results, the concept of the commodity terms of trade is usually used in preference to the income terms of trade concept for measuring the gain from international trade. It shows that a country's factorial terms of trade improve as productivity improves in its export industries. If the productivity of a country's exports industries increases, its factorial terms of trade may improve even though its commodity terms of trade may deteriorate. For example, the prices of its exports may fall relatively to its import prices as a result of increase in the productivity of the export industries of a country. The commodity terms of trade will deteriorate but its factorial terms of trade will show an improvement.

**Its Limitations:** This index is not free from certain limitations. It is difficult to obtain the necessary data to compute a productivity index. Further, the single factorial terms of trade do not take into account the potential domestic cost of production of imports industries in the other country. To overcome this weakness, Viner formulated the double factorial terms of trade.

### Double Factoral Terms of Trade:

Double factorial terms of trade take into account productivity changes both in the domestic export sector and the foreign export sector producing the country's imports. The index measuring the double factorial terms of trade can be expressed as:

$$Td = Tc \cdot Fx/Fm = Px/Pm \cdot Fx/Fm$$

Where  $Td$  is the double factorial terms of trade,  $Px/Pm$  is the commodity terms of trade,  $Fx$  is the export productivity index, and  $Fm$  is the import productivity index.

It helps in measuring the change in the rate of exchange of a country as a result of the change in the productive efficiency of domestic factors manufacturing exports and that of foreign factors manufacturing imports for that country. A rise in the index of double factorial terms of trade of a country means that the productive efficiency of the factors producing exports has increased relatively to the factors producing imports in the other country.

### Its Criticisms:

**1. Not Possible to Construct a Double Factoral Terms of Trade Index:** In practice, however, it is not possible to calculate an index of double factorial terms of trade of a country. Prof. Devons made some calculations of changes in the single factorial terms of trade of England between 1948-53. But it has not been possible to construct a double factorial terms of trade index of any country because it involves measuring and comparing productivity changes in the import industries of the other country with that of the domestic export industries.

**2. Required Quantity of Productive Factors not Important:** Moreover, the important thing is the quantity of commodities that can be imported with a given quantity of exports rather than the quantity of productive factors required in a foreign country to produce its imports.

**3. No Difference between the Double Factoral Terms of Trade and the Commodity Terms of Trade:** Again, if there are constant returns to scale in manufacturing and no transport costs are involved, there is no difference between the double factorial terms of trade and the commodity terms of trade of a country.

**4. Single Factoral Terms of Trade is more Relevant Concept: According to Kindleberger,** "The single factorial terms of trade is a much more relevant concept than the double factorial. We are interested in what our factor can earn in goods, not what factor services can command in the services of foreign factors. Related to productivity abroad moreover, is a question of the quality of the goods imported." Real Cost Terms of Trade Viner has also developed a terms of trade index to measure the real gain from international trade. He calls it the real cost terms to trade index. This index is calculated by multiplying the single factorial terms of trade with the reciprocal of an index of the amount of disutility per unit of productive resources used in producing export commodities. It can be expressed as:

$$Tr = Ts \cdot Rx = Px/Pm \cdot Fx \cdot Rx$$

Where  $Tr$  is the real cost terms of trade,  $Ts$  is the single factorial terms of trade and  $Rx$  is the index of the amount of disutility per unit of productive resources used in producing export commodities.

**Its Criticisms:** A favourable real cost terms of trade index ( $Tr$ ) shows that the amount of imports received is greater in terms of the real cost involved in producing export commodities. But this index fails to measure the real cost involved in the form of goods produced for export which could be used for domestic consumption to pay for imports. To overcome this problem, Viner develops the index of utility terms of trade.

**Utility Terms of Trade:** The utility terms of trade index measures “changes in the disutility of producing a unit of exports and changes in the relative satisfactions yielded by imports, and the domestic products foregone as the result of export production.” In other words, it is an index of the relative utility of imports and domestic commodities forgone to produce exports.

The utility terms of trade index is calculated by multiplying the real cost terms of trade index with an index of the relative average utility of imports and of domestic commodities foregone. If we denote the average utility by  $u$  and the domestic commodities whose consumption is foregone to use resources for export production by  $a$ , then  $u = Um_1 / Ua_1 / Um_0 / Ua_0$  where  $u$  is the index of relative utility of imports and domestically foregone commodities. Thus, the utility terms of trade index can be expressed as:

$$Tu = Tr.u = Px/Pm. Fx.Rx.u$$

Since the real terms of trade index and utility terms of trade index involve the measurement of disutility in terms of pain, irksomeness and sacrifice, they are elusive concepts. As a matter of fact, it is not possible to measure disutility (for utility) in concrete terms.

**Its Criticisms:** Hence like the single and double factorial terms of trade concepts, the concepts of real and utility terms of trade are of little practical use. They are only of academic interest. That is why the concepts of the commodity terms of trade and of income terms of trade have been used in measuring the gains from international trade in developed as well as developing countries.

#### ECONOMIC GROWTH:

Economic growth is defined in positive terms. It is measured by the sustained increase in real, national or per capita income of a nation over time. Economic growth is usually measured in terms of an increase in real GNP or GDP over time or an increase in income per head over time. Growth is desirable as it enables a society to consume more goods and services.

That is why growth is considered to be the basis of advancing real living standards or human welfare. At the same time, it is also true that growth does not necessarily lead to an increase in human welfare. Economic development is more fundamental than economic growth.

Economic growth figure does not give us correct assessment of an economy for the following reasons:

First, economic growth is associated with an increase in GNP/GDP per capita. But per head GNP does not, by itself, constitute or measure welfare or success in development. This is because per capita income does not give any information about income distribution. It is observed that despite high rate of growth, some of the countries experience high incidence of poverty and unemployment.

Secondly, economic growth does not talk about the quality of life. In poor developing countries, people end themselves at low level of literacy, low standards of health and nutrition, etc. Miseries arising from lack of food and shelter do not get reflected in the concept of economic growth.

Thirdly, economic growth does not deal with environmental issues. In the process of achieving higher economic growth, environmental considerations like depletion of renewable natural resources, air pollution, etc., are given little weightage. These aspects have an important bearing on the economic development of a country in the long run. Desire for higher and higher economic growth is associated with environmental damages. It is economic development that cares for environmental issues.

It is, thus, obvious that economic development involves something more than economic growth. In fact, there are certain qualitative dimensions in the process of development that are conspicuous by their absence in the growth or expansion of an economy. Economic development implies both more output and changes in the technical, institutional arrangements by which it is produced, and a change in attitudes and values.

“Development concerns not only man’s material needs but also improvement of the social conditions of his life. Development is, therefore, not only economic growth but growth plus change—social, cultural and

institutional as well as economic. Development is, thus, not purely an economic phenomenon; it has to be conceived of as a multi-dimensional process."

Naturally, economic development is a value-based concept. It should include not only the acceleration of economic growth but also the reduction of inequality and eradication of poverty, increase in employment opportunities and welfare of the masses, etc.

However, economic development may mean more. Economic development must encompass human development. Amartya Sen defines economic development in terms of 'entitlement' and 'capability'. Entitlement refers to the set of alternative commodity bundles that an individual can command through the totality of rights and obligations that he or she faces.

Thus, entitlements of people generate 'capabilities'. Entitlements of people do not only depend on their incomes but also on a host of power relations in a society, the spatial distribution of resources in a society (like facilities of health care and schooling) and what individuals can accumulate from such supplied by the state. 'Capability' represents a person's freedom to achieve various functioning combinations. Thus, the notion of capability is essentially one of freedom the range of options a person has in deciding what kind of life he or she wants to pursue.

Poverty, according to Amartya Sen, is a kind of 'capability deprivation'. Sen says that economic development should be interpreted as a process of expansion of the freedoms that people enjoy. Important areas of unfreedom that people face are famine and undernourishment, mass illiteracy, poor state of health of people, lack of shelter and other basic needs, economic insecurity, denial of basic civil and political liberty, etc.

Through the policies of expansion of human capabilities, development processes can be initiated. That is why it is said that the basic objective of development is the process of expansion of entitlements and human capabilities. That is to say, how GNP growth is used to improve human capabilities and, in turn, how people utilise their capabilities in economic development.

India's economy grew at an impressive 8.2 per cent in the first quarter of 2018-19 financial year ending June 30 on the back of a strong core performance and a healthy base.

This jump ahead of national elections next year would help bolster the government amid a debate over its economic record versus that of its predecessor following the release of back-series data recently. This will also be factored in by the monetary policy committee at its next review scheduled for October 3-5.

### **Prebisch-Singer Thesis: Assumptions and Criticisms | Trade | Economics**

In this article we will discuss about:- 1. Introduction to Prebisch-Singer Thesis 2. Assumptions in the Prebisch-Singer thesis 3. Criticisms.

#### **Introduction to Prebisch-Singer Thesis:**

There is empirical evidence related to the fact that the terms of trade have been continuously moving against the developing countries. On the basis of exports statistics concerning the United Kingdom between 1870 and 1940, Raul Prebisch demonstrated that the terms of trade had secular tendency to move against the primary products and in favour of the manufactured and capital goods.

This viewpoint has been strongly supported by H. W. Singer. The essence of Prebisch-Singer thesis is that the peripheral or LDC's had to export large amounts of their primary products in order to import manufactured goods from the industrially advanced countries. The deterioration of terms of trade has been a major inhibitory factor in the growth of the LDC's.

**Prebisch and Singer** maintain that there has been technical progress in the advanced countries, the fruit of which have not percolated to the LDC's. In addition, the industrialised countries have maintained a monopoly control over the production of industrial goods. They could manipulate the prices of manufactured goods in their favour and against the interest of the LDC's.

Except the success of OPEC in raising the prices of crude oil since mid 1970's, there has been a relative decline in the international prices of farm and plantation products, minerals and forest products. Consequently, the terms of trade have remained unfavourable to the developing countries.

### **Assumptions in the Prebisch-Singer thesis:**

The main assumptions in the Prebisch-Singer thesis are as under:

- (i) As income rises in the advanced countries, the pattern of demand shifts from primary products to the manufactured products due to Engel's law.
- (ii) There is slow rise in demand for products in the developed countries.
- (iii) The export market for product of LDC's is competitive.
- (iv) The export market for products of developed countries is monopolistic.
- (v) Wages and prices are low in LDC's.
- (vi) The appearance of substitutes for products of LDC's reduces demand for them.
- (vii) The benefit of increased productivity is not passed by the producers of manufactured products in advanced countries to the LDC's through lower prices.
- (viii) The economic growth in the LDC's is indicated by income terms of trade.

Singer has pointed out that the recent increase in debt problem of the LDC's has imparted another twist to the hypothesis of secular deterioration of terms of trade for them in two ways. Firstly, a high proportion of proceeds from exports are not available for imports.

Secondly, there is an increased pressure upon the LDC's to raise exports in order to repay external debts on account of IMF-induced adjustment policies. These pressures make the debt- ridden LDC's to compete with other poor countries to enlarge their export earnings. It results in decline in the prices of export products of these countries.

### **Criticisms of Prebisch-Singer Thesis:**

The Prebisch-Singer Thesis has come to be criticized on several grounds:

#### **(i) Not Firm Basis for Inference:**

The inference of secular deterioration of terms of trade for the LDC's rests upon the exports of primary vis-a-vis manufactured products. In this regards, it should be remembered that the LDC's export wide variety of primary products. Sometimes they export also certain manufactured products.

They, at the same time, do not import only manufactured products but also a number of primary products. It is, therefore, not proper to draw a firm inference about terms of trade just on the basis of primary versus manufactured exports.

#### **(ii) Faulty Statement of Gains and Losses of Primary Exporters:**

Jagdish Bhagwati has pointed out that the index of terms of trade employed in this thesis understates the gains of exporters of primary products. At the same time, there is over-statement of losses of primary producers.

#### **(iii) Faulty Index of TOT:**

The Prebisch- Singer hypothesis rests upon the index, which is the inverse of the British commodity terms of trade. This index overlooks the qualitative changes in products, appearance of new varieties of products, services like transport etc. The generalisation based on British terms of trade for the period 1870 to 1930, according to Kindleberger, is not true for the other developed countries of Europe.

#### **(iv) Neglect of Supply Conditions:**

In the determination of terms of trade, the Prebisch-Singer thesis considers only demand conditions. The supply conditions, which are likely to change significantly over time, have been neglected. The relative prices, in fact, depend not only upon the demand conditions but also on the supply conditions.

**(v) Little Effect of Monopoly Power:**

One of the arguments in support of this thesis was that the higher degree of monopoly power existing in industry than in agriculture led to secular deterioration of terms of trade for the developing countries. In this connection, it was also agreed that the monopoly element prohibited the percolation of benefits of technical progress to the LDC's. The empirical evidence has not supported such a line of argument.

**(vi) Inapplicability of Engel's Law:**

The secular decline in the demand for primary products in developed countries was attributed to Engel's Law. But this is not true because this law is applicable to food and not to the raw materials, which constitute sizeable proportion of exports from, the LDC's.

**(vii) Benefits from Foreign Investment:**

The deterioration of the terms of trade for the LDC's is sometimes linked not to non-transmission of productivity gains to them by advanced countries through lower prices of manufactured goods, yet the benefits from foreign investments have percolated to the LDC's through the product innovations, product improvement and product diversification. These benefits can amply offset any adverse effects of foreign investment upon terms of trade and the process of growth.

**(viii) Difficult to Assess Variation in Demand for Primary Products:**

The secular deterioration in terms of trade of the LDC's during 1870 to 1930 period was supposed to be on account of the declining world demand for primary products. During that period, there were tremendous changes in world population, production techniques, living standards and means of transport. Given those extensive developments, it is extremely difficult to assess precisely the changes in world demand for primary products and the impact of those changes upon the terms of trade.

**(ix) Export Instability and Price Variations:**

The Prebisch-Singer thesis suggested that export instability in the LDC's was basically due to variations in prices of primary products relative to those of manufactured products. Mc Been, on the contrary, held that the export instability in those countries could be on account of quantity variations rather than the price variations.

**(x) Development of Export Sector not at the Expense of Domestic Sector:**

In this thesis, Singer contended that foreign investments in poor countries, no doubt, enlarged the export sector but it was at the expense of the growth of domestic sector. This contention is, however, not always true because the foreign investments have not always crowded out the domestic investment. If foreign investments have helped exclusively the growth of export sector, even that should be treated as acceptable because some growth is better than no growth. It is far-fetched to relate worsening of terms of trade to the non-growth of domestic sector.

**(xi) Faulty Policy Prescription:**

**Prebisch** prescribed the adoption of protectionist policies by LDC's to offset the worsening terms of trade. Any gains from tariff or non-tariff restrictions upon imports from advanced countries can at best be only short-lived because they will provoke retaliatory actions from them causing still greater injury to the LDC's.

In the present W.T.O regime of dismantling of trade restrictions, Prebisch suggestion is practically not possible to implement. There should be rather greater recourse to export promotion, import substitution, favourable trade agreements and adoption of appropriate monetary and fiscal action for improving the terms of trade in the developing countries.

**(xii) Lack of Empirical Support:**

The studies made by Morgan, Ellsworth, Haberler, Kindelberger and Lipsey have not supported the secular deterioration of terms of trade hypothesis, Lipsey has observed, "Although there have been very large swings in U.S. terms of trade since 1879, no long term trend has emerged. The average level of U.S. terms of trade since World War II has been almost the same as before World War I." This objection of lack of empirical support against the Prebisch-Singer hypothesis is actually not very sound. A number of more recent empirical studies have, in fact, gone in favour of this hypothesis.

Despite all the objections raised against the Prebisch-Singer thesis, the empirical evidence has accumulated in support of it. The studies made by UNCTAD for 1950-61 and 1960-73 periods showed that there was a relative decline in the terms of trade of LDC's vis-a-vis the developed countries. A study attempted by Thirlwall and Bergevin for the period 1973-82 indicated that there was an annual decline of terms of trade of LDC's for all the primary commodity exports at the rate of 0.36 percent.

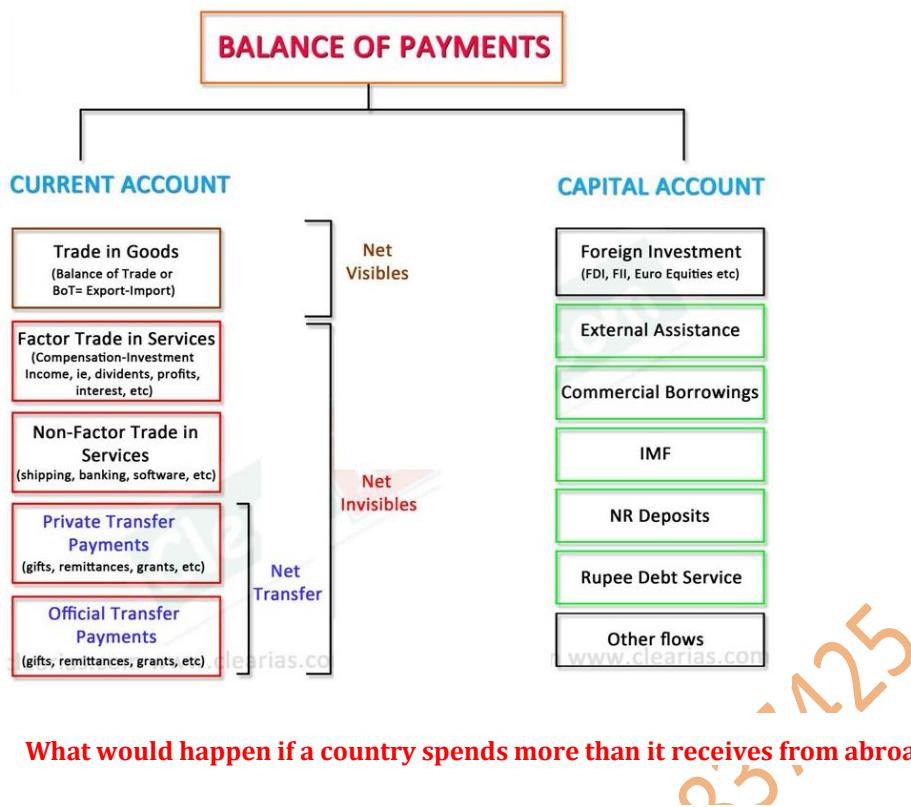
On the basis of their study related to exports of manufactured products for LDC's to the advanced countries during 1970-87 period, Singer and Sarkar found that the terms of trade of LDC's declined by about 1 percent per annum. Even the World Development Report 1955 recognised that the world prices of primary products declined sharply during 1980's and the terms of trade of LDC's deteriorated during 1980-93 period.

According to the 1997 Human Development Report of UNDP, the terms of trade for the least developed countries declined by a cumulative 50 percent over the past 25 years. According to South Commission, compared with 1980, the terms of trade of developing countries had deteriorated by 29 percent in 1988. The average real price of non-oil commodities had declined by 25 percent during 1980-88 period compared with the previous two decades. The terms of trade of non-oil developing countries had deteriorated during 1980-88 period by 8 percent compared with 1960's and 13 percent compared with 1970's.

### What is Balance of Payments (BoP)?

- The balance of payments (BoP) record the transactions in goods, services, and assets between residents of a country with the rest of the world for a specified time period typically a year.
- It represents a summation of country's current demand and supply of the claims on foreign currencies and of foreign claims on its currency.
- There are two main accounts in the BoP – the current account and the capital account.
- **Current Account:** The current account records exports and imports in goods, trade in services and transfer payments.
- **Capital Account:** The capital account records all international purchases and sales of assets such as money, stocks, bonds, etc. It includes foreign investments and loans.
- Note: *The IMF accounting standards of the BOP statement divides international transactions into three accounts: the current account, the capital account, and the financial account, where the current account should be balanced by capital account and financial account transactions. But, in countries like India, the financial account is included in the capital account itself.*

### Balance of Payments: Mindmap



### What would happen if a country spends more than it receives from abroad?

What would happen if an individual spends more than his income? He must finance the same by some other means, right? It may be by borrowing or by selling assets.

The same way, if a country has a deficit in its current account (spending more abroad than it receives from sales to the rest of the world), it must finance it by borrowing abroad or selling assets. Thus, any **current account deficit** is of necessity financed by a net capital inflow.

### Filling Current Account Deficit with Foreign Exchange Reserves

A country could also engage in official reserve transactions, running down its reserves of foreign exchange, in the case of a deficit by selling foreign currency in the foreign exchange market. But, official reserve transactions are more relevant under a regime of pegged exchange rates than when exchange rates are floating.

A country is said to be in **balance of payments equilibrium** when the sum of its current account and its non-reserve capital account equals zero so that the current account balance is financed **entirely by international lending without reserve movements**.

Note: A BOP surplus is accompanied by an accumulation of foreign exchange reserves by the central bank.

### Ideally, BoP should be Zero! How?

From a balance of international payments point of view, a surplus on the current account would allow a deficit to be run on the capital account. For example, surplus foreign currency can be used to fund investment in assets located overseas. Also, if a country has a current account deficit (trade deficit), it will borrow from abroad.

In reality, the accounts do not exactly offset each other, because of statistical discrepancies, accounting conventions and exchange rate movements that change the recorded value of transactions.

<b>1. Exports</b>	250.5
<b>2. Imports</b>	-381.1
<b>3. Trade balance (2 - 1)</b>	<b>-130.6</b>
<b>4. Invisibles (net)</b>	84.6
(a) Non-factor income	48.8
(b) Income	-17.3
(c) Pvt. Transfers	53.1
<b>5. Current account balance (3 + 4)</b>	<b>-45.9</b>
<b>6. External assistance (net)</b>	4.9
<b>7. Commercial borrowing (net)</b>	12.5
<b>8. Short-term debt</b>	11.0
<b>9. Banking Capital of which</b>	4.9
NR deposits (net)	3.2
<b>10. Foreign investment (net)</b>	39.7
Of which:	
(i) FDI (net)	9.4
(ii) Portfolio	30.3
<b>11. Other flows (net)</b>	-11.0
<b>12. Capital account total (net)</b>	<b>62.0</b>
<b>13. Errors and Omissions</b>	-3.0
<b>14. Balance of payments [ 5 + 12+13]</b>	<b>13.1</b>
<b>15. Reserve use (- increase)</b>	-13.1

1425

An example of Balance of International Payments with respect to India

### BoP Deficit or Surplus



- The decrease (increase) in official reserves is called the overall balance of payments deficit (surplus).
- The balance of payments deficit or surplus is obtained after adding the current and capital account balances.
- The balance of payments surplus will be considered as an addition to official reserves (reserve use).

### BoP Crisis



- Countries with current account deficits can run into difficulties. If the deficit is large and the economy is not able to attract enough inflows of foreign investment, then their currency reserves will dwindle.
- There may come a point when the country needs to seek emergency borrowing from institutions such as the International Monetary Fund, that may lead to external debt.
- Countries with deficits in their current accounts will build up increasing debt and/or see increased foreign ownership of their assets.
- BoP crisis is also known as the currency crisis.

### Autonomous Transactions vs Accommodating Transactions



- International economic transactions are called autonomous when transactions are made independently of the state of the BoP (for instance due to profit motive).
- These items are called 'above the line' items in the BoP.

- The balance of payments is said to be in surplus (deficit) if autonomous receipts are greater (less) than autonomous payments.
- Accommodating transactions (termed 'below the line' items), on the other hand, are determined by the net consequences of the autonomous items, that is, whether the BoP is in surplus or deficit.
- The **official reserve transactions** are seen as the accommodating item in the BoP (all others being autonomous).

### Errors and Omissions

Errors and Omissions constitute the third element in the BoP (apart from the current and capital accounts) which is the 'balancing item' reflecting our inability to record all international transactions accurately.

### BoT vs BoP

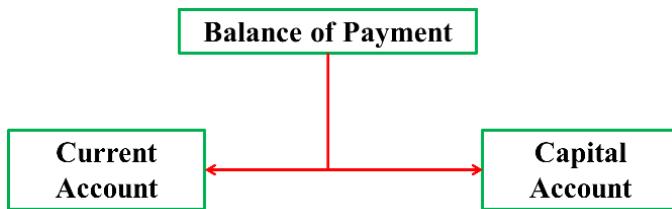
- The balance of Trade (BoT) or Trade Balance is a part of the Balance of Payments (BoP). BoT just includes the balance between export and import of goods.
- BoP not only adds the service-trade but also many other components in the current account (Eg: Transfer payments) and capital account (**FDI**, loans etc).

### Rupee Convertibility

Indian rupee is fully convertible only in the current account and not in the capital account.

#### Things to note:

- If an Indian investor earns interest or dividend in his investment abroad, that will be included in the current account of India.
- If FDI is done by an American company in India, that investment will be accounted in the capital account of India.
- NRI deposits are calculated under Capital Accounts while Private Remittances are calculated under Current Account.
- In general, National Income ( $Y$ ) = Private Consumption Expenditure ( $C$ ) + Investment ( $I$ ) + Government Expenditure ( $G$ ) + Net Exports ( $E$ ).
- In a closed economy, Savings ( $S$ ) = Investment ( $I$ ).
- In an open economy, Savings ( $S$ ) = Investment ( $I$ ) + Net Exports ( $E$ )
- OR, **Net Exports = Savings - Investment**. This is actually the Balance of Trade (Trade Balance).



**Systematic Record**

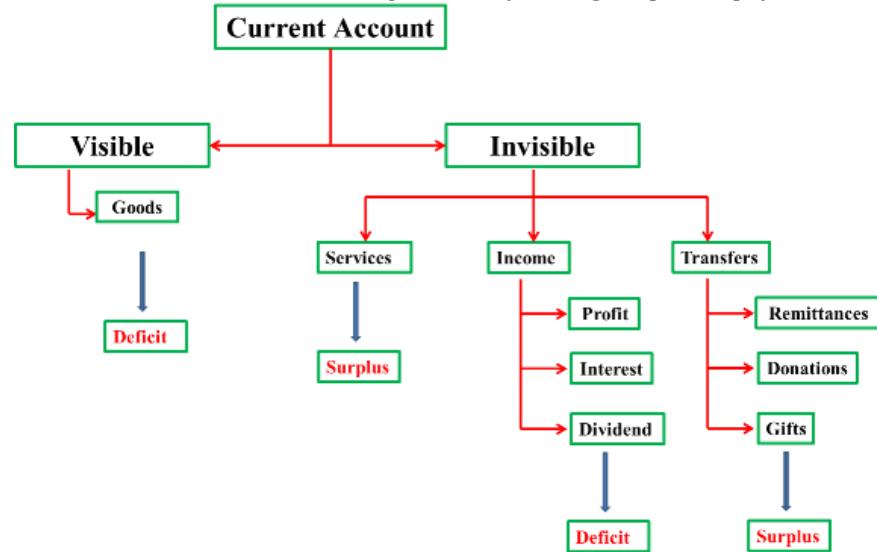
- Maintained by Central bank of each country
- As per IMF manual BMP6
- All amounts are Expressed in Dollars
- Credit is denoted as incoming money (+) & Debit is denoted as outgoing money (-)

**Economic Transactions**

- Resident vs non-resident for ex. between US & India
- In specified time period
- US Fed Reserve → Outgoing (-)
- Indian RBI → Incoming (+)

**Current Account*****Balance of Trade / Visible***

- Also known as balance on merchandising goods
- Records all transactions of foreign currencies on account of export & import of goods only
- BOT is always deficit in India means import >> export
- Means insufficiencies of foreign currency through export to pay for critical imports

***Balance of Invisible***

- Records all transactions of foreign currencies resulting out of export & import of services such as banking, insurance, software, consultancy etc.
- Also includes the following :

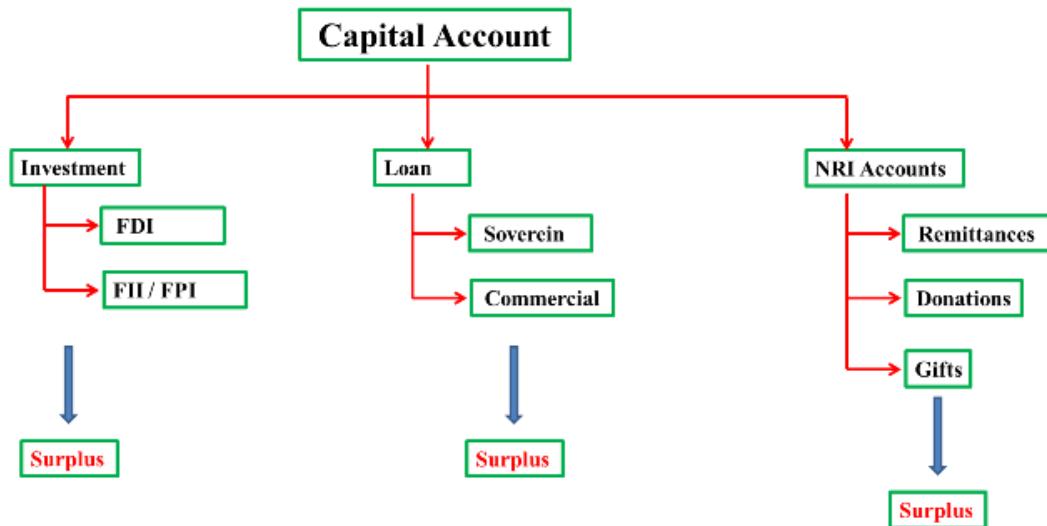
- Inward & outward tourism
- Inward & outward education
- Inward & outward medical treatments
- Inward & outward Remittances : Indians settled abroad (Indian diaspora) send money in foreign currency to India & similarly for foreigners in India
- Profit & Interest on ReFI investments outgoing & similarly incoming interest on Indian investors investing in foreign markets

Points to ponder

- Net effect of BOT + BOI leads to Current account surplus (CAS) or current account deficit (CAD)
- Generally, BOP is negative in India & if BOI is over and above BOT than CAS otherwise CAD
- CAD + Fiscal deficit = Twin Deficit

Capital Account

- Foreign investment in India (ReFI (FDI, FII), ADR, Direct purchase of land or assets)
- External commercial borrowing (IMF, WB, ADB etc.), External assistance & Grants etc.
- Indian Diaspora maintain deposits in foreign currency in India known as NRI deposits
- Overall BOP cannot tell the health of an economy, weather there is CAD or CAS but what is important is the manner in which inflow & outflow are matched
- As CAD can be fulfilled by ECB (external borrowings)/RBI (internal borrowings) in capital account of BOP
- The true picture can be seen from current account of BOP



### BOP Crisis 1992

- BOP crisis when capital account surplus are insufficient to finance current account deficit
- Gulf war period → Oil price shoot
- Current account became more negative than positive capital account
- Lead to negative BOP → Rupee value fell → Bad for Indian importers
- RBI sold its own dollars to make BOP Zero
- But RBI did not have enough dollars to make BOP zero
- India pledged 65 tonnes of gold from IMF to make BOP Zero

#### *Steps to avoid BOP crisis*

- CAD should be kept low (Or Positive) e.g. Germany
- Capital account should be kept largely surplus (attract investment + LPG reforms)
- Central Bank must have large FOREX reserve e.g. China

#### *Forex Reserve Consists of -*

- Foreign currency
- Gold
- SDR
- Reverse Tansche

**Reverse Tansche** – A certain proportion of a member country's quota is specified as its reserve tranche. The member country can access its reserve tranche funds at its discretion, and is not under an immediate obligation to repay those funds to the IMF. Member nation reserve tranches are typically 25% of the member's quota.

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### **Exchange Rates Evolution in India**

#### ***Fixed Exchange Rate***

- Upto March 1992 in India
- 1\$ was approx. equal to Rs. 40
- Authorized dealers under FEMA → If enough dollars not available, then go to RBI
- If large number of dollar required by people due to any geopolitical or any other factor –
- Devaluation of currency to balance demand of dollar
- Devaluation of national currency increases exports

#### ***Floating exchange rate***

- RBI doesn't intervene to control exchange rate
- Free market supply-demand came into play to decide the exchange rates
- But too much volatility in exchange rate → Hence in real-life countries use "Managed floating"

#### ***Managed floating Exchange Regime***

- RBI interfere to manage volatility in floating exchange regime
- To stop depreciation of rupee, RBI should sell dollars from its forex reserve
- To stop appreciation of rupee, RBI should purchase dollars from market

### **NEER vs REER**

**Nominal Effective Exchange Rate (NEER)**

**Real Effective Exchange Rate (REER)**

The weighted average of bilateral nominal

exchange rates of home currency in terms of  
foreign currencies

Weighted average of nominal exchange rates,  
adjusted for inflation

$$REER = \Sigma \left( NEER * \frac{\text{Indian CPI}^{\text{wt of Partner}}}{\text{Partner CPI}} \right)$$

- NEER & REER → Weighed Geometric mean with foreign countries currencies – 6 or 36
- NEER & REER → Calculated by CSO & RBI
- REER is an indicator of trade competitiveness
- REER > 100 means national currency is overvalued
- REER < 100 means national currency is undervalued
- Undervalued currency → Good for exports e.g. Chinese Yuan

SIR'S.

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### Convertibility of accounts

#### Why restrictions on convertibility?

- Central bank cannot "manage" floating exchange rate regime all the time
- Otherwise Forex-reserve will get empty
- Hence quantitative restrictions on rupee-conversion to foreign currency

#### Full Current Account Convertibility

- Indian Rupee is fully convertible into another foreign currency
- For current account transactions and vice-versa
- Though Current account in India is fully convertible but still some restrictions from FEMA viz.
- Not convertible for betting, gambling, prohibited items
- Travel to Nepal, Bhutan → Can carry Max. \$ 10 k || Max. Rs. 100 denomination
- Travel to other countries → Can carry Max. \$25 k per visit (beyond that need RBI permission)

- For Education, Medical treatment, Employment purpose → limit is 1 lakh \$
- Gift sending → limit Rs. 5 lakh worth

#### **Capital account convertibility**

- Indian Rupee is not fully convertible on Capital Account

- Only partial convertibility

#### **Restrictions under FEMA**

- ECB
- Quota → 1 Billion \$ Entire Aviation sector
- Individual company → 300 million \$
- Maturity → 3 years minimum + Approval from RBI
- FDI, FII restrictions
- 100% for Investment liberty in Bhutan
- Everywhere else → \$75 k investment per year by individuals e.g. *buying shares, opening foreign bank accounts*
- Financial Action Task Force (FATF) → “Non co-operative countries” [Iran, N Korea] – No investing in these countries

**Liberalized remittance scheme (2004)** – Indian residents may spend \$2.5 lakh dollars per year per person abroad apart from FEMA limit

#### **Effects of Tariffs under Partial Equilibrium**

When a small country imposes tariff on import of the product that competes with the product of the small domestic industry, the tariff can neither affect the international prices (as the country is small) nor can it affect the rest of the economy (as the industry is small). In such conditions, the partial equilibrium analysis that concerns the market for a particular product becomes the most appropriate.

#### **Assumptions:**

The effects of tariffs under a partial equilibrium system can be analysed on the basis of the following set of assumptions:

- (i) The demand and supply curves of the given commodity are concerned with home country that imposes import tariff.
- (ii) The given demand and supply curves remain constant.
- (iii) There is no change in consumers' tastes, prices of other commodities and money income of the consumers.
- (iv) There is an absence of technological improvements, externalities and other factors that result in changes in cost conditions.
- (v) No tariff is imposed by the home country on the import of materials that are required for producing the given commodity.

- (vi) Imported product and home-produced product are perfect substitutes.
- (vii) There is no change in the foreign price of the commodity.
- (viii) There is an absence of transport costs.
- (ix) The foreign supply curve of commodity is perfectly elastic.
- (x) Domestic production of commodity takes place at increasing costs.

Kindelberger has mentioned eight effects of tariff in a partial equilibrium approach.

These include: 1. Protective or Production Effect 2. Consumption Effect 3. Revenue Effect 4. Redistribution Effect 5. Terms of Trade Effect 6. Competitive Effect 7. Income Effect 8. Balance of Payments Effect.

**These effects are explained below:**

#### 1. Protective or Production Effect:

The imposition of tariff may be intended to protect the home industry from the foreign competition. As tariffs restrict the flow of foreign products, the home producers find an opportunity to increase the domestic production of import substitutes. That is why Ellsworth termed the protective or production effect of tariff as the import-substitution effect.

In order to analyse the production and other effects diagrammatically, it is assumed that the world supply of the given commodity is perfectly elastic so that it is available at the constant price and the world supply curve is perfectly elastic. The domestic production of the commodity is possible, it is assumed, at an increasing cost. Therefore, the domestic supply curve is positively sloping. The domestic demand curve of the commodity, as usual, slopes negatively.

In Fig. 15.1, demand and supply are measured along the horizontal scale and price along the vertical scale. D and S are the domestic demand and supply curves of the given commodity respectively. Originally PW is the world supply curve of the commodity and the pre-tariff price is OP. At the price OP, the domestic supply is OQ and demand is OQ<sub>1</sub>. The gap QQ<sub>1</sub> between demand and supply is met through import of the commodity from abroad. If PP<sub>1</sub> per unit tariff is imposed on import, the price rises to OP<sub>1</sub> and world supply curve shifts to P<sub>1</sub>W<sub>1</sub>. At this higher price, the demand is reduced from OQ<sub>1</sub> to OQ<sub>2</sub> whereas the domestic supply expands from OQ to OQ<sub>3</sub>.

Thus the domestic production of import substitutes rises by the extent of Q<sub>3</sub>Q<sub>1</sub>. This is the protective, production or import substitution effect. The increased domestic production reduces the demand for foreign product from Q<sub>1</sub> to Q<sub>2</sub>Q<sub>3</sub>.

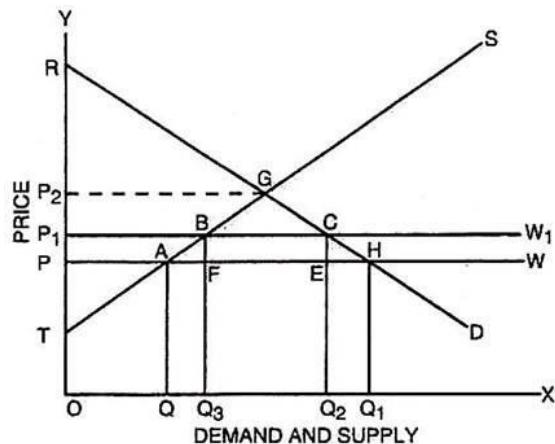


Fig. 15.1

In case the per unit tariff were PP<sub>2</sub> causing the price to rise to OP<sub>2</sub>, the domestic production would have expanded large enough to meet fully the domestic demand. In such a situation, imports would have been reduced to zero.

## 2. Consumption Effect:

The imposition of import duty on a particular commodity has the effect of reducing consumption and also the net satisfaction of the consumers. According to Fig. 15.1 at the free trade price OP, the total consumption was OQ<sub>1</sub>. It was constituted by OQ as the consumption of home produced good and QQ<sub>1</sub> as the consumption of foreign produced good. After the imposition of tariff, when price rises to OP<sub>1</sub>, the consumption is reduced from OQ<sub>1</sub> to OQ<sub>2</sub>.

Out of it, OQ<sub>3</sub> is the consumption of home-produced good and Q<sub>2</sub>Q<sub>3</sub> is the consumption of foreign produced good. Thus there is a reduction in consumption by OQ<sub>1</sub> – OQ<sub>2</sub> = Q<sub>1</sub>Q<sub>2</sub>. There is net loss in consumer satisfaction amounting to the area PHCP<sub>1</sub>. Kindelberger has called the combined protective and consumption effects as the trade effect. Subsequent to the imposition of tariff, the volume of international trade gets reduced from QQ<sub>1</sub> to Q<sub>2</sub>Q<sub>3</sub>.

## 3. Revenue Effect:

The imposition of import duty provides revenues to the government. The revenue receipts due to tariff signify a revenue effect. In Fig. 15.1 the original price OP does not include any tariff and no revenue receipts become available to the government.

Subsequently when PP<sub>1</sub> per unit tariff is imposed, the revenue receipts of the government can be determined by multiplying per unit tariff PP<sub>1</sub> (or BF) with the quantity imported Q<sub>3</sub>Q<sub>2</sub> or (EF). Thus the revenue receipts due to tariff amount to PP<sub>1</sub> × Q<sub>3</sub>Q<sub>2</sub> = BF × EF = BCEF. This is revenue effect of tariff.

## 4. Redistribution Effect:

The imposition of tariff, on the one hand, causes a reduction in consumer's satisfaction and, on the other hand, provides a larger producer's surplus or economic rent to domestic producers and revenues to the government. Thus tariff leads to redistributive effect in the tariff-imposing country. The redistributive effect can be shown with the help of Fig. 15.1.

$$\text{Loss in Consumer's Surplus} = \text{RHP} - \text{RCP}_1 = \text{PHCP}_1$$

$$\text{Gain in Producer's Surplus} = \text{TBP}_1 - \text{TAP} = \text{PABP}_1$$

$$\text{Gain in Revenues to the Government} = \text{BCEF}$$

$$\text{Net Loss} = \text{PHCP}_1 - (\text{PABP}_1 + \text{BCEF})$$

$$= \Delta \text{BAF} + \text{ACEH}$$

Kindelberger calls this net loss as the "deadweight loss" due to tariff. It signifies the cost of tariff. It is clear that tariff causes a redistribution of income or satisfaction in the given country. Consumers suffer a loss while producers and government make a gain.

## 5. Terms of Trade Effect:

The traditional theorists believed that tariff led to an improvement in the terms of trade of the tariff-imposing countries. The modern theorists, however, do not hold such a simplistic view. In their opinion, the terms of trade, consequent upon the imposition of tariff, depend upon the elasticities of demand and supply of products of the two trading countries.

If the foreign supply of a good is perfectly elastic or if the foreign suppliers are ready to supply the product at a constant price, the imposition of tariff is not likely to improve the terms of trade for the tariff-imposing country. In case the foreign supply of a good is not perfectly elastic, the imposition of tariff can have varying effects upon the terms of trade of the tariff-imposing country depending upon the elasticities of demand and supply in the two trading countries. It has been explained through Fig. 15.2.

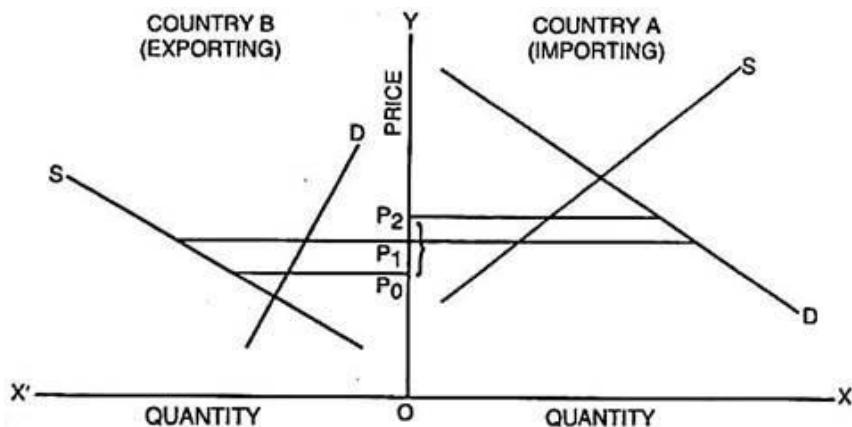


Fig. 15.2

In Fig. 15.2, country A is an importing and country B is an exporting country. The domestic demand and supply curves of the exporting country B are less elastic. Country B imposes per unit tariff of  $P_0P_2$  amount for reducing import of the commodity. Since the domestic demand is inelastic, the surplus product of country B can be disposed of in the other country A. Therefore, the exporters lower the price of the commodity by  $P_1P_0$ . So  $P_0P_1$  part of tariff is borne by exporters and  $P_1P_2$  part of it by the importers.

If the tariff burden borne by importers in country A is less than the burden borne by the exporters i.e.,  $P_1P_2 < P_1P_0$ , the rise in price of the commodity in country A is less than the fall in the export price of the commodity in country B. In such a situation, the terms of trade become favourable to the tariff-imposing country A.

In case,  $P_1P_2$  is more than  $P_1P_0$ , the rise in price of the commodity in country A being larger than the fall in export price of the commodity in country B, the terms of trade get worsened for country A. It can happen when the elasticities of demand and supply for the commodity in country B are relatively more than in country A.

#### 6. Competitive Effect:

The imposition of tariff, can facilitate the growth of an infant industry which otherwise is not in a position to face the foreign competition. As tariff makes the foreign product relatively more costly, the domestic infant industry finds opportunity to grow behind the protective shield.

Thus tariff increases the competitive power of the industries of tariff-imposing country. After the infant industry becomes mature enough to face the foreign competition, tariff may be removed.

The increase in the competitive power of the domestic industries through tariff is called as the competitive effect. The fears are, however, expressed that protection breeds inefficiency and promotes the growth of monopolies.

It was because of such considerations that Kindleberger commented, "...if foreign competition is kept out by tariff the domestic industry tends to become sluggish, fat and lazy." He pointed out that tariff was actually anti-competitive. In his words, "...The competitive effect of a tariff is really an anti-competitive effect; competition is stimulated by tariff removal."

#### 7. Income Effect:

The imposition of tariff reduces the demand for foreign products. The amount of money not spent on imported goods may either be spent on the home-produced goods or saved. If there is the existence of surplus productive capacity in the home country, switch of expenditure from foreign to home-produced goods will lead to a rise in production, employment and income.

Alternatively, if the money not spent on foreign products is saved, that result in greater accumulation of capital. The financing of investment through additional saving can again enlarge the productive capacity and income in the tariff-imposing country. The expansionary effect of reduction in imports upon domestic income can be shown through Fig. 15.3.

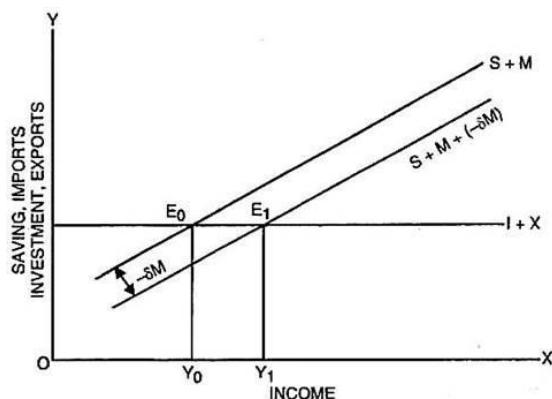


Fig. 15.3

In Fig. 15.3, income is measured along the horizontal scale and saving (S), imports (M), investment (I) and exports (X) are measured along the vertical scale. If investment and export are assumed to be autonomous, the investment plus export function ( $I + X$ ) can be drawn. Assuming saving and import to be positively related with income, saving plus import function ( $S + M$ ) can be drawn.

The intersection between  $I + X$  and  $S + M$  results in the original equilibrium at  $E_0$  and the original equilibrium income is  $Y_0$ . If tariff causes a reduction in imports by  $\delta M$ , the  $S+M$  function shifts down to  $S+M+(-\delta M)$ . The intersection between  $I + X$  and  $S+M+(-\delta M)$  function at  $E_1$  determines the equilibrium income at a higher level  $Y_1$ . The expansion in income  $Y_0Y_1$  is much more than the change in imports measured by the vertical distance between  $S+M$  and  $S+M+(-\delta M)$  curves on account of the reverse operation of import multiplier.

It is sometimes argued that the income effect due to tariff may not actually take place even under a less than full employment situation for two reasons.

Firstly, the imposition of tariff by the home country hits the exports of the foreign country. Such a policy, if raises income, has such an effect at the cost of the foreign country, the exports of which decline resulting in a contraction in its output, employment and income. Joan Robinson and many other economists have called such a trade policy as a 'beggar-my-neighbour' policy.

In due course of time, such policies can have adverse repercussion even upon the tariff-imposing country. The reduced exports of a foreign country will lower its income. The foreigners will be able to buy less products from the tariff-imposing country. Thus even the latter will also experience a decline in the demand for its products and consequent decline in its income. Secondly, the foreign countries may adopt retaliatory tariff and other countervailing measures and neutralise any advantage obtained by the home country and the desired income effect may fail to materialise.

If the home country is in a state of full employment, the tariff causing a reduction in imports and switch of expenditure to the home-produced goods, will not contribute in raising the output. Consequently, the inflationary pressures alone will be felt. There may be an increase only in money income and the real income, output or employment will remain unaffected.

#### 8. Balance of Payments Effect:

When tariff is imposed by a country upon foreign products, the home-produced goods become relatively cheaper than the imported goods. The price effect caused by tariff, on the one hand, reduces imports from other countries and on the other hand, causes increased production and purchase of home-produced goods. That leads to a reduction in the balance of payments deficit of the home country. It may be illustrated also through Fig. 15.1.

Before the imposition of tariff, the quantity imported was  $Q_1Q_1$ . The price being  $OP$  or  $AQ$ , the value of import or payment for import was  $AQ \times Q_1 = QAHQ_1$ . After the imposition of tariff, the price is  $OP_1$  or  $BQ_3$  and quantity imported is reduced to  $Q_2Q_3$ .

The value of import is  $Q_3BCQ_2$  out of which  $BFEC$  is the revenue receipts of the government of the tariff-imposing country so that the net payment to foreigners for import is  $Q_3FEQ_2$ , which is less than the payment

for imports before tariff. Needless to say that tariff can cause a reduction in the balance of payments deficit of the tariff-imposing country.

In the regard, some doubts are raised that tariff may fail to improve the balance of payments deficit. Firstly, if the demand for imports in the tariff-imposing country is inelastic, tariff may not reduce the volume of imports despite the rise in the prices of imported goods consequent upon the imposition of tariff.

Secondly, if the balance of payments disequilibrium is caused by the export surplus, the imposition of tariff will further aggravate rather than adjust the balance of payments disequilibrium. Thirdly, tariff can, at the maximum, bring about some adjustment in temporary disequilibrium of international payments. There is no possibility of adjusting the fundamental disequilibrium in the balance of payments through tariff restrictions.

### Effects of Tariff to Protect Domestic Industries!

The economic effects of tariffs used as a trade barrier to protect domestic industries. We use partial equilibrium approach represented by supply and demand analysis to examine the effects of tariffs. Let us take a product, say computer, in which India has a comparative disadvantage. In Fig. 36.1 we have drawn domestic demand and supply curve  $D_d$  and  $S_d$  respectively of computers in India.

In the absence of foreign trade, domestic price  $OP_d$  is determined at which  $OQ$  quantity of computers is demanded and sold. Assume now that the Indian economy is now opened to trade with USA which has a comparative advantage in the production of computers.

Suppose  $OP_w$  represents the world price at which USA sells computers. We assume that when the Indian economy is opened to trade, it can import computers from the USA at this world price  $OP_w$ . In other words, free trade price is  $OP_w$ .

It will be seen from Fig. 36.1 that at free trade  $OP_w$ , the domestic demand (or consumption) for computers is  $OH$  and the domestic producers are supplying  $CW$  quantity. Thus, with free trade out of  $OH$  quantity of consumption of computers, domestic production is  $ON$ . The quantity  $NH$  of computers is being imported.

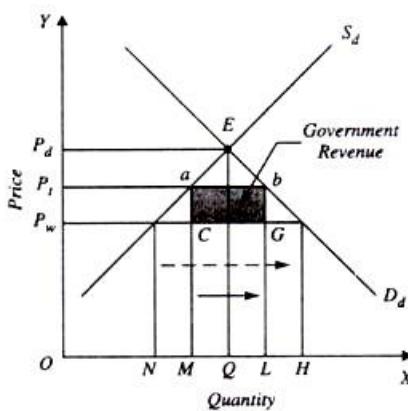


Fig. 36.1. Economic Effects of a Tariff.

#### Consumption Effect:

Now suppose that in order to protect domestic computer industry India imposes a tariff of  $P_t - P_w$  per computer. As a result price of computer in India will rise to  $OP_t$ . The imposition of tariff and consequently rise in the price of computers in India will have a variety of effects.

First, as shall be seen from Fig. 36.1 that at a higher price  $OP_t$  the consumption of computers in India will decline to  $OL$  computers as the higher price causes buyers of computers to move up the demand curve  $D_d$ . This is a consumption effect of the tariff. It follows that the Indian consumers of computers have been badly hurt by the imposition of tariff on computers.

As a result of tariff, they pay  $P_t - P_w$  more per computer which they now buy at the higher price. Besides, tariff induces them to buy fewer computers with the result that they reallocate a part of their expenditure to less desired substitute products.

### **Production Effect:**

Second, tariff benefits Indian producers of computers as they will now be able to sell their computers at a higher price  $OP_t$  instead of free trade price  $OP_w$ . Further, at a higher price  $OP_t$  they will produce and supply more computers by moving up the domestic supply curve  $S_d$ .

It will be seen from Fig. 36.1 that at price  $OP_t$ , domestic producers of computers raise domestic production and quantity supplied from  $ON$  to  $OM$ . This is the production effect of tariff. It should be further noted that the increase in domestic production of computers by  $NM$  implies that some scarce resources will be bid away from other presumably more efficient industries.

### **Trade Effect:**

Third, as a result of imposition of tariff by India, American producers will be hurt. It may be noted that American producers would not get the higher price  $OP_t$  as the higher price is due to tariff which will be obtained by the Indian Government. For American producers price of computers will remain at  $OP_w$ . Since due to rise in price to  $OP_t$ , domestic production increases to  $OM$  and domestic consumption falls to  $OL$ , the imports of computers fall from  $NH$  to  $ML$ . This is trade effect of tariff.

### **Revenue Effect:**

Now, the important effect which is to be examined is whether economic well-being of the nation will increase as a result of imposition of tariff. The answer is in the negative. Of course, the Indian Government will gain from tariff equal to the revenue it collects from tariff. With rise in price by  $P_t - P_w$  per computer and the import of computers reduced to  $ML$ , (or  $ab$ ) the total revenue of the Government from tariff will be equal to the shaded area  $abGC$ .

This is the revenue effect of tariff. This revenue from tariff obtained by the Government is "essentially a transfer of income from the consumers to government and does not represent any net change in the nation's well being. The result is that government gains a portion of what consumers lose."

But the effects of tariffs go beyond what has been explained above on the basis of partial equi-librium analysis of demand and supply. As seen above, the imposition of tariff on computers will reduce export earnings of American computer industry—the industry in which it has a comparative advantage.

Because of lower exports of computers, the production of computers will be reduced in the USA. This will cause the resources to be shifted from relatively more efficient computer industry to relatively inefficient industries of the USA in which it has a comparative disadvantage.

Thus tariffs cause misallocation of resources. To conclude in the words of Professors McConnel and Brue, "specialisation and unfettered world trade based on comparative advantage would lead to the efficient use of world resources and an expansion of the world's real output. The purpose and effect of protective tariffs are to reduce world trade. Therefore, aside from their specific effects upon consumers, foreign and domestic producers, tariffs diminish the world's real output."

### **Effects of Quotas:**

Quotas are quantitative restrictions on the quantity or value of a commodity to be imported in a country during a period. Since quota limits the imports of a commodity, it reduces supply of a commodity in a country as compared to the case with a free trade.

Like tariffs, quotas raise the prices of imported goods and encourage domestic production of those goods. But in case of quotas, the government does not collect any revenue. Quotas may be imposed against imports from all countries or used against the imports of only a few countries.

Economic effects of quota are graphically shown in Fig. 36.2 where  $DM$  and  $SM$  are domestic demand and supply curves of a commodity respectively. In the absence of trade price of the commodity in the country is  $P_A$ . Suppose the world price of the product is  $P_w$ .

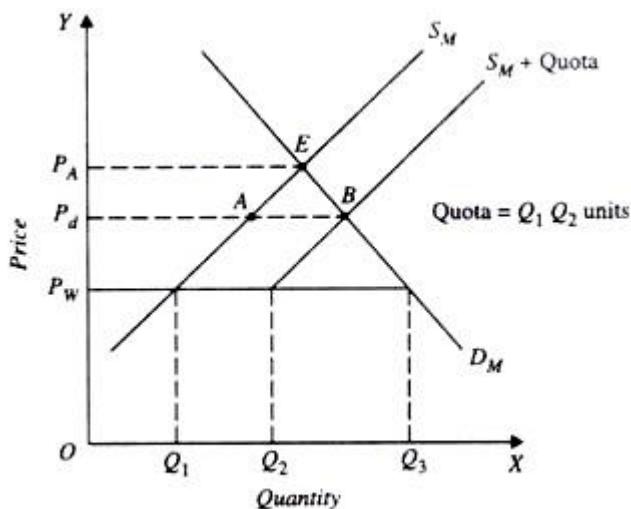


Fig. 36.2. Effects of Quota

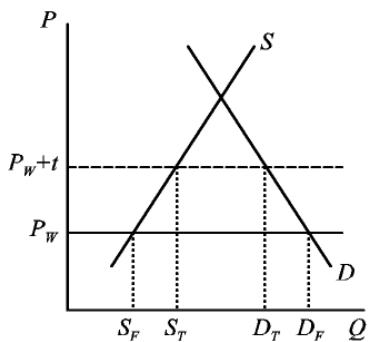
Under free trade, at price  $P_w$  of the commodity the domestic producers of country will produce  $OQ_1$  quantity but as domestic demand of the product at price  $P_w$  is  $OQ_1$  the quantity  $Q_1Q_3$  represents the imports at the world price  $P_w$ .

Now assume that the Government imposes a quota that fixes the quantity of the product equal to  $Q_1Q_3$  to be imported. With this the total supply of the product in the domestic market will be away from the domestic supply  $S_M$  equal to the distance  $Q_1Q_2$ . Incorporating the quota equal to  $Q_1Q_2$  we draw a new supply curve  $S_M + \text{Quota}$ , which is to the left of the free-trade supply curve  $S_M$ .

It will be seen from Fig. that interaction of the supply curve ( $S_M + \text{Quota}$ ) with the domestic demand curve  $D_M$  determine higher price  $P_d$  than the world price  $P_w$ . It will be seen from Fig. 36.2 that difference  $AB$  between demand and domestic supply at price  $P_d$  is exactly equal to the fixed quota of  $Q_1Q_2$  quantity of imports.

It is thus dear that like tariffs fixation of quota has served to limit trade and raise price. It will therefore have same effects as we have explained in case of tariff. It may however be noted that unlike tariff in case of quota Government would not collect any revenue.

### Tariff in Partial Equilibrium



Small-Country Case

**Key:**

$P, Q$  Price and quantity of good

- S, D** Domestic supply and demand in importing country  
**F, T** Equilibrium values under free trade and tariff  
**t** Specific tariff  
**P<sub>w</sub>** Price of good on world market

### Explanation:

The diagram shows upward-sloping supply and downward-sloping demand for a good inside a country. The world price,  $P_w$ , is assumed to be below the country's autarky price, so that it has excess demand at the world price and will import the good if it is free to do so. If that were not the case, a tariff on imports would have no effect. Thus, with free trade, the country supplies and demands the good in the amounts  $S_F$  and  $D_F$  respectively, as determined by the supply and demand curves.

A tariff raises the domestic price above the world price by the amount of the tariff, so long as the good continues to be imported. The effects on the domestic market depend on whether the tariff induces any change in the world price. In the small-country case, the country's imports are too small to matter for the world market and the world price remains unchanged. If the importing country is large, however, its reduced demand for imports causes the world price to fall by an amount that cannot be determined with this diagram alone. The large-country case shown here simply assumes an arbitrary fall in the world price. Finally, if the tariff is larger than the gap between the country's autarky price and the world price, then it is "prohibitive," reducing imports of the good to zero.

### Small-Country Case

In the small-country case, the world price remains unchanged, and therefore the domestic price must rise by the full amount of the tariff. This rise in price causes domestic supply to rise and domestic demand to fall, along the respective supply and demand curves. Since the quantity of imports is the difference between demand and supply, imports are reduced by both of these changes.

Effects on welfare within the country can be measured by various areas in the diagram. The rise in price benefits suppliers, as measured by the increase in producer surplus, which is the area to the left of the supply curve between the old and new prices. The same price increase hurts demanders, as measured by the decrease in consumer surplus, which is the analogous area to the left of the demand curve. In addition to these effects on the market participants, the tariff-levying government also benefits in the form of increased government revenue from the tariff, which is simply the rectangle representing the tariff itself multiplied by the new level of imports. This tariff revenue accrues directly to the government, but presumably indirectly to the domestic population as taxpayers.

The net of these three changes is necessarily a loss in the small country case, since the gains to suppliers and government are both subsumed within the larger area of loss to demanders. The net loss appears as two triangles, with height equal to the size of the tariff and width equal to the amounts by which supply and demand have changed. Together these triangles measure the deadweight loss from the tariff, and they exist only to the extent that the tariff has induced changes in the behavior of the market participants.

### Large-Country Case

The small-country analysis also implies that a country of any size will demand less from the world market, as a result of a tariff, for any given world price. This reduced demand from the world market, if the country is large enough to matter at all, causes the world price to fall. The size of this fall depends on properties of the world market that do not appear here, although it is normally smaller than the tariff itself.

The fall in world price implies that the domestic price rises by less than the tariff. Qualitatively, the rising domestic price has the same effects on domestic suppliers and demanders as in the small-country case, but quantitatively both the gain to suppliers and the loss to demanders are reduced, since the price increase is smaller. The tariff revenue, on the other hand, is *not* reduced by the fall in world price. On the contrary, with a specific tariff the tariff revenue is larger here, since the size of the tariff itself is

the same and the quantity of imports (which has fallen less) is larger. In the figure, the rectangle of tariff revenue is no longer fully subsumed within the area of lost consumer surplus, but instead extends below it

The net welfare effect of the tariff on a large tariff-levying country can therefore be positive. This is the case, above, if the portion of tariff revenue shown by the upward-sloping-cross-hatched rectangle below  $P_w$  is larger than the sum of the two downward-sloping-cross-hatched triangles of deadweight loss. If so, this is a case of an optimal tariff that has successfully altered the importing country's terms of trade in its favor. Indeed, the benefit depends entirely on being able to push down the world price, which the country pays for its imports, and thus occurs at the expense of foreign exporters. (The effect on welfare abroad does not appear in this figure.)

### **Prohibitive Tariff**

If a tariff is set high enough, it will choke off all trade in the good. For this to happen in the small country, the tariff need only be as large as the difference between its autarky price (i.e., the price  $P_A$  at which domestic supply equals domestic demand) and the world price. For it to happen in a large country, the same must be true, except that the relevant world price is the one that will prevail after the country's imports are zero. In either case, however, the result is that the country moves to its autarky equilibrium with the autarky price  $P_A$ , and this is the case even if the tariff is made still larger. That is, once the tariff is large enough to eliminate trade, further increases in the tariff have no effect on anything.

The welfare effect of a prohibitive tariff is analogous to a nonprohibitive tariff, in that suppliers gain and demanders lose. However, there is no tariff revenue, since imports are zero, and as a result the deadweight loss from the tariff is maximized.

### **THEORY OF REGIONALISM**

In international relations, regionalism is the expression of a common sense of identity and purpose combined with the creation and implementation of institutions that express a particular identity and shape collective action within a geographical region. Regionalism is one of the three constituents of the international commercial system (along with multilateralism and unilateralism).

The first coherent regional initiatives began in the 1950s and 1960s, but they accomplished little, except in Western Europe with the establishment of the European Community. Some analysts call these initiatives "old regionalism".<sup>[1]</sup> In the late 1980s, a new bout of regional integration (also called "new regionalism") began and continues still. A new wave of political initiatives prompting regional integration took place worldwide during the last two decades. Regional and bilateral trade deals have also mushroomed after the failure of the Doha round.

The European Union can be classified as a result of regionalism. The idea that lies behind this increased regional identity is that as a region becomes more economically integrated, it will necessarily become politically integrated as well. The European example is especially valid in this light, as the European Union as a political body grew out of more than 40 years of economic integration within Europe. The precursor to the EU, the European Economic Community (EEC) was entirely an economic entity.

#### **Introduction**

To understand **regionalism**, we need to know various dimensions of the region. Region as a geographical unit, is delimited from each other. Region as a social system, reflects the relation between different human beings and groups. Regions are an organized cooperation in cultural, economic, political or military fields. Region acts as a subject with distinct identity, language, culture and tradition.

**Regionalism** is an ideology and political movement that seeks to advance the causes of regions. As a process it plays role within the nation as well as outside the nation i.e. at international level. Both types of regionalism have different meaning and have positive as well as negative impact on society, polity, diplomacy, economy, security, culture, development, negotiations, etc.

At the international level, regionalism refers to transnational cooperation to meet a common goal or to resolve a shared problem or it refers to a group of countries such as Western Europe, or Southeast Asia, linked by geography, history or economic features. Used in this sense, regionalism refers to attempts to reinforce the links between these countries' economic features.

The second meaning of the term is regionalism at national level refers to a process in which sub-state actors become increasingly powerful, power devolves from central level to regional governments. These are the regions within country, distinguished in culture, language and other socio-cultural factors.

Now, we will discuss in detail about regionalism within nation w.r.t. INDIA only and then next we will discuss about regionalism at international level.

### Regionalism within nation

If the interest of one region or a state is asserted against the country as a whole or against another region/state in a hostile way, and if a conflict is promoted by such alleged interests, then it can be called as regionalism.

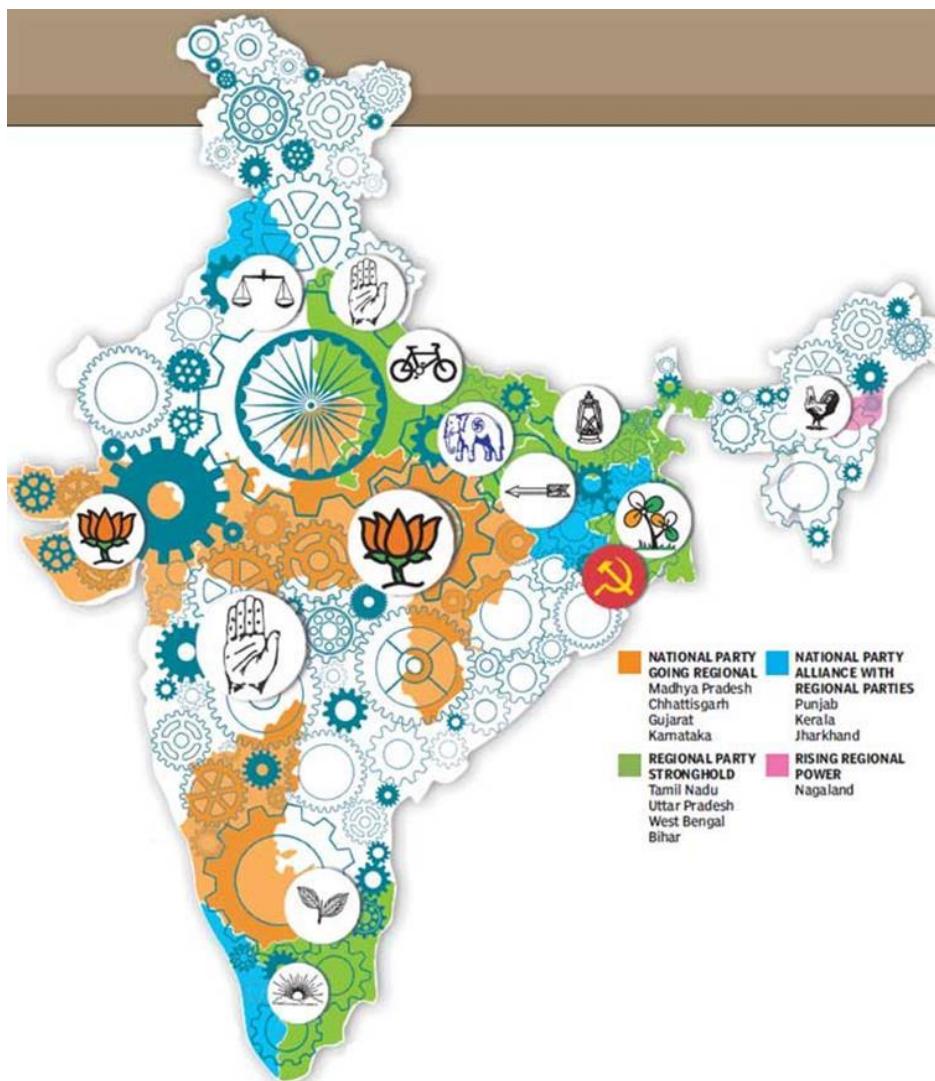
If someone is aspiring to or make special efforts to develop one's state or region or to remove poverty & make social justice there, then that cannot be called as regionalism. Regionalism doesn't mean defending the federal features of the constitution. Any demand for separate state, autonomous region or for devolution of power below the state level is also, sometimes confused as regionalism.

### Regionalism in INDIA

Roots of regionalism is in India's manifold diversity of languages, cultures, ethnic groups, communities, religions and so on, and encouraged by the regional concentration of those identity markers, and fueled by a sense of regional deprivation. For many centuries, India remained the land of many lands, regions, cultures and traditions.

For instance, southern India (the home of Dravidian cultures), which is itself a region of many regions, is evidently different from the north, the west, the central and the north-east. Even the east of India is different from the North-East of India comprising today seven constituent units of Indian federation with the largest concentration of tribal people.

HILAL



**Regionalism** has remained perhaps the most potent force in Indian politics ever since independence (1947), if not before. It has remained the main basis of many regional political parties which have governed many states since the late 1960s. Three clear patterns can be identified in the post-independence phases of accommodation of regional identity through statehood.

First, in the 1950s and 1960s, intense (ethnic) mass mobilisation, often taking on a violent character, was the main force behind the state's response with an institutional package for statehood. Andhra Pradesh in India's south showed the way. The fast unto death in 1952 of the legendary (Telugu) leader Potti Sriramulu for a state for the Telugu-speakers out of the composite Madras Presidency moved an otherwise reluctant Jawaharlal Nehru, a top nationalist leader and it was followed by State reorganisation commission under Fazal Ali paving way for State Reorganization Act, 1956.

Second, in the 1970s and 1980s, the main focus of reorganization was India's North-east. The basis of reorganization was tribal insurgency for separation and statehood. The main institutional response of the Union government was the North-eastern States Reorganisation Act, 1971 which upgraded the Union Territories of Manipur and Tripura, and the Sub-State of Meghalaya to full statehood, and Mizoram and Arunachal Pradesh (then Tribal Districts) to Union Territories. The latter became states in 1986. Goa (based on Konkani language (8<sup>th</sup> Schedule)), which became a state in 1987, was the sole exception.

Third, the movements for the three new states (created in 2000)—Chhattisgarh out of Madhya Pradesh, Jharkhand out of Bihar and Uttarakhand out of Uttar Pradesh—were long-drawn but became vigorous in the 1990s. And the most recent one, we can see with the division of Andhra Pradesh,

giving a separate **Telangana**, which started in 1950s.

**Potential cause for regionalism:** Regionalism could have flourished in India, if any state/region had felt that it was being culturally dominated or discriminated against.

Regional economic inequality is a potent time bomb directed against national unity and political stability. But, this potential cause did not take shape of regionalism, because of government steps, which focussed on the balanced regional development and fulfilled the aspiration of states.

**Few of them are – Industrial Policy, 1956, National Integration council, 1961.** Transfer of financial resources to poorer states on the recommendation of Finance commission.

Planning became an important tool through Planning commission and Five year plans. But the new government is planning to devolve the planning power to the respective states, so that they can do planning with real-time approach of their respective needs and requirements.

The central government has categorized states on the basis of backwardness and accordingly gives grants and loans. In September 2013, **Raghuram Rajan**, recommended a new index of backwardness to determine which state need special help from central government. It is composed of 10 equally weighted indicators. According to that, Orissa and Bihar are the most backward states.

Regular public investment by central government through centrally sponsored schemes have focussed on development of necessary infrastructure and poverty eradication, integrated rural development, education, health, family planning, etc. For example- **Pradhan Mantri Gram Sadak Yojana, Mid day meal, MGNREGA**, etc.

Government at centre and states give incentives to private players to develop in backward states through subsidies, taxation, etc. Nationalisation of banks, granting new banking licences, making mandatory for banks to open rural branches are few other steps for inclusive development and balanced regional development.

There are certain discrepancies at the implementation part of these schemes. Few areas have been neglected like irrigation, which has created agricultural disparity. Rain fed and dry land agriculture also have been neglected, which became cause for suicide of farmers in various states (Coverage of P. Sainath, gives us more insights on such issues.) In reality, the interstate industrial disparity, agricultural disparity, number of BPL, etc. are decreasing. But, more actions are needed to completely eradicate the disparities

### Why regional disparity still persists?

**Low rate of economic growth:** The economic growth of India has been fluctuating since independence. But with respect to High population growth, the economic growth has been not enough to catch the development with full speed. In the last decade, the economic growth were progressive, but now they are reeling under the influence of world economic crisis and other bottlenecks at domestic level.

**Socio-economic and political organisation of states:** The states have been unable to do the adequate land reforms and the feudal mentality still persists. Bhoojan and Gramdaan movements, after independence, were not enthusiastically carried and even land under land Banks were not efficiently distributed. The political activities in the backward states were limited to vote bank politics and scams.

**Lower level of infrastructural facilities in backward states:** The level of infrastructural development, such as- power distribution, irrigation facilities, roads, modern markets for agricultural produce has been at back stage. All these are state list subjects.

**Low level of social expenditure by states on education, health and sanitation:** These subjects are core for human resource development. The states which have invested heavily on these subjects, fall under the developed and advanced states, for example Tamil Nadu, where health care services in Primary health centre is bench mark for other states.

**Political and administration failure:** This is source of tension and gives birth to sub-regional movements for separate states. Jarkhand, Chattisgarh, Uttrakhand and recently Telangana are result of these failure only.

Many such demands are in pipeline such as- Vidarbha, Saurashtra, Darjeeling and Bodoland, etc. These failures also weakens the confidence of private players and do not attract investors in the states.

**"Son of the soil"** doctrine explains a form of regionalism, which is in discussion since 1950. According to it, a state specifically belongs to the main linguistic group inhabiting it or that the state constitutes the exclusive homeland of its main language speakers, who are the sons of the soil or local residents.

### **Why son of the soil?**

- There remains a competition for job between migrant and local educated middle class youth.
- This theory works mostly in cities, because here outsiders also, get opportunity for education, etc.
- In such theories, major involvement of people is due to rising aspiration.
- Economy's failure to create enough employment opportunity.

### **Clashes in India having colours of regionalism**

#### **Linguistic Reorganization of States**

It was the demand of **Potti Sriramulu**, a freedom fighter and a devoted follower of Mahatma Gandhi, that led to the creation of Andhra Pradesh state and linguistic recognition of the states in India. To achieve this end, he died in 1952 after not eating for 52 days in support of a Telugu-speaking state. Sriramulu's death forced Jawahar Lal Nehru to agree to the various demands from other parts of the country with similar demands. Consequently, in 1954, a States Reorganisation Committee was formed with Fazal Ali as its head, which recommended the formation of 16 new states and 3 Union Territories based on the language.

#### **Demand for Dravida Nadu**

Going back to the journey of Regionalism in India, it is well noticeable that it emerged with Dravidian Movement, which started in Tamil Nadu in 1925. This movement, also known as 'Self-Respect Movement' initially focused on empowering Dalits, non-Brahmins, and poor people. Later it stood against imposition of Hindi as sole official language on non-Hindi speaking areas. But it was the demand of carving out their own Dravidastan or Dravida Nadu, which made it a secessionist movement. As early as 1960s the DMK and the Nan Tamil organized a joint campaign throughout Madras state demanding its secession from India and making it an independent sovereign state of Tamiland. DMK proposed that the states of Madras, Andhra Pradesh, Kerala and Mysore should secede from the Indian union and form an independent "Republic of Nadu"

#### **Telangana Movement**

In the years after the formation of Andhra Pradesh state, people of Telangana expressed dissatisfaction over how the agreements and guarantees were implemented. Discontent with the 1956 Gentleman's agreement intensified in January 1969, when the guarantees that had been agreed on were supposed to lapse. Student agitation for the continuation of the agreement began at Osmania University in Hyderabad and spread to other parts of the region. Government employees and opposition members of the state legislative assembly threatened "direct action" in support of the students. This movement since then finally resulted last year one separate state of Telangana.

It should be noted that roots of disparity in two regions was in colonial rule. Andhra was under direct rule of crown while Telangana was ruled by Nizam of Hyderabad, who was not so efficient ruler. So over time Andhra got more developed in comparison to Telangana.

#### **Shiv Sena against Kannadigas**

In 1966, Shiv Sena, in Maharashtra, launched its agitation against Kannadigas in the name of Marathi pride. The first targets of its agitation were South Indians who were the workers of Udupi hotels in Mumbai. This

agitation was labelled to be a retaliation of the lathi-charge on Marathi speaking people in the border areas.

### Bodoland Demand within Assam

The Bodo agitation is led by the Assam Bodo Students Union which is demanding a separate state and has resorted to wide scale violence and series of crippling bandhs to pursue their demand. One of the basic reason Assam agitations is because of the expansion of education, particularly higher education, but not industrialization and other job creating institutions is increasing the army of educated youths in the backward regions. These frustrated young men are allured by the movements against the inflow of people from other countries and states. On the other hand these unemployed youths are also attracted by the caste, communal and other sectional agitations fighting for the protection of rights on sectarian lines.

### Khalistan Movement

It was during the era of 1980s that Khalistan movement with its aim to create a Sikh homeland, often called Khalistan, cropped up in the Punjab region of India and Pakistan. In fact this demand has also the colours of communalism, as there demand is only for Sikhs.

### Creation of new States in 2000

In 2000, the Government of India, pursuant to legislation passed by Parliament during the summer, created three new states, Chhattisgarh, Uttaranchal, and Jharkhand, reconstituting Madhya Pradesh, Uttar Pradesh, Bihar, respectively. Both the ruling BJP and the opposition Congress party supported the formation of the states. The basis for creating the new states is socio-political and not linguistic.

### Impact of Regionalism in India

#### Positive

Scholars believe that regionalism plays important role in building of the nation, if the demands of the regions are accommodated by the political system of the country.

Regional recognition in terms of state hood or state autonomy gives self-determination to the people of that particular region and they feel empowered and happy. Internal self-determination of community, whether linguistic, tribal, religious, regional, or their combinations, has remained the predominant form in which regionalism in India has sought to express itself, historically as well as at present time.

Regional identities in India have not always defined themselves in opposition to and at the expense of, the national identity, noticed a democratic effect of such process in that India's representative democracy has moved closer to the people who feel more involved and show greater concern for institutions of local and regional governance.

For example- Tripura Tribal Autonomous District Council (TTADC), formed in 1985, has served to protect an otherwise endangered tribal identity in the state by providing a democratic platform for former separatists to become a party of governance, and thereby reduced significantly the bases of political extremism in the state.

In such political setup, there always remains a scope of balanced regional development. The socio-cultural diversity is given due respect and it helps the regional people to practise their own culture too.

#### Negative

Regionalism is often seen as a serious threat to the development, progress and unity of the nation. It gives internal security challenges by the insurgent groups, who propagate the feelings of regionalism against the mainstream politico-administrative setup of the country.

Regionalism definitely impacts politics as days of coalition government and alliances are taking place. Regional demands become national demands, policies are launched to satisfy regional demands and generally those are extended to all pockets of country, hence national policies are now dominated by regional demands. E.g. MSP given to sugarcane, it was helpful for farmers in Maharashtra but it was implemented across all

states resulting agitations of farmers belonging to UP, Punjab and Haryana. Meanwhile it sowed seed of defection among ministers and targeting to corresponding minister.

Some regional leaders play politics of vote bank based on language, culture, this is certainly against healthy democratic procedures. This always leads to demand for separate state and it has observed that after creating small states only few political leaders could run efficient government else alliances run government which ultimately makes administration machinery ineffective.

Developmental plans are implemented unevenly focusing on regions to which heavy weight leaders belongs are benefitted, hence unrest is generated among rest regions. Law and order is disturbed, agitations with massive violence take place ultimately government is compelled to take harsh steps; hence wrong signals are emitted about government authorities.

Regionalism, also becomes hurdle in the international diplomacy, as in 2013 we saw how Tamil Nadu regional parties were against the Prime Minister of India, attending the Commonwealth heads meeting(CHOGM) in Sri Lanka. These actions have their direct implication on the relation of India with Sri Lanka or other countries of the forums or in case of Mamata Banerjee not agreeing to Land Boundary agreement and Teesta River Water sharing, when the leaders at centre level were ready to do it.

The regionalism induced violence disturbs the whole society, people are killed, students cannot attend the schools & colleges, tourism cannot be promoted, etc. This impacts the development of human resource, governments need to deploy extra forces to control the situation and it has direct implication on the economy of the nation. Impacted societies remain aloof from the mainstream development and then the regional variations and backwardness is clearly reflected.

On the broader front, it harms India's status in global arena and becomes hurdle in becoming global power or world leader.

*Other than the evolution of regionalism in India and its impact, it is also associated a discussed with the Nationalism and federalism. These two aspects are discussed below.*

### Nationalism and Regionalism

Historians of modern India have highlighted, how the growth in Indian nationalism against British colonialism since the nineteenth century also gave birth to intense awakening among various region-based linguistic nationalities for identity and self-determination, often in opposition to the pan-Indian nationalism.

To mobilise people from all over India, leaders of mainstream nationalism has to recognise and mobilise the local leaders, they had to reach out to the people in local languages. The mass mobilisation was only possible, when people became aware about their regional needs and its importance.

The mainstream Indian nationalism had continuously to grapple with regional nationalism. Under the heavy weight of regional identities of the people of India, the Indian National Congress (INC) could have hardly remained immune from it. It gradually became, in fact, an inter-regional coalition of forces. And for that reason only and to further strengthen the feeling of nationalism, INC used to have their annual meetings in different regions of India, raising the consciousness of people against the colonial exploitation.

### Federalism and Regionalism

The role played by Indian federalism in ensuring India's unity, stability and survival as a polity in the face of persistent regionalism, often verging on separation, rooted in manifold and complex social and cultural diversity, and mass poverty, illiteracy, extreme regional unevenness in development, and widespread inequality. The question has assumed special significance in the aftermath of the disintegration of the multi-ethnic and multinational Soviet Union, and the split up of the Federal Republic of Yugoslavia.

The need for federalism is enhanced in countries with ethnically distinct regions where the territorial accommodation of distinct groups of people is of paramount importance. For those countries, a combination of shared rule (for general purposes of unity) and some kind of self-rule (for regional/local purposes of

diversity) is a must if unity and integrity are to be maintained.

Indian federalism is seen as a method of accommodation of regionalism in India. Federalism is seen here as a political equilibrium, which results from the appropriate balance between shared rule and self-rule. In the post Second World War period, many post-colonial countries adopted federalism as a method of governance in multi-ethnic contexts.

India's rich diversity sometimes looks like an obstacle to unity. But the latest election has proved that a commitment to resolving differences peacefully and democratically can transform diversity into a source of strength.

India's federal reconciliation of regional identity with autonomy has a democratic aspect. Democracy rather than ethnicity is thus the legitimacy basis of such political institutions.

The federalism has been given strong push by devolving powers at local level to states and their local bodies through 73<sup>rd</sup> and 74<sup>th</sup> Amendment act. And according to Indian judiciary federalism is basic structure of Indian constitution.

The regions declared under fifth and sixth schedule enjoy certain autonomy which gives them scope to maintain their own culture and develop according to their own need. This make federal structure stronger. Other than this any policy for such area is different than the mainland policy as in case of **THE PROVISIONS OF THE PANCHAYATS (EXTENSION TO THE SCHEDULED AREAS) ACT, 1996**, popularly known as **PESA**

### **Why diversity of India is supreme guarantee of democracy?**

Diversity is undoubtedly strength of our democracy. Indians have so much to differ and divide themselves, but thread of democracy is common among different regions, communities, religions, and cultures. India has seen many secessionist movements since Independence, but none of them was too big to challenge a common resource pool huge democracy. If a particular community rise up against our democracy it has to be big enough to challenge the whole nation. But no community is that big in India. For e.g. Culture, language, social practices etc. change every few miles in India. And that micro culture is comprised of people from various sects and religion. So it is not possible that a huge part of India find a common ground to fight against Democratic government.

### **Regionalism in international arena**

In the introduction we saw, what does regionalism means in international sense. The use of common cultural identities to define regions grew out of the process of decolonization, which was observed to lead to the construction of "culture blocs".

Regionalism in International sense can be with respect to **-Physical regions**, refer to territorial, military, and economic spaces controlled primarily by states, and **functional region**, which are defined by non-territorial factors such as culture and the market that are often the purview of non-state actors.

During the Cold War, most regions were either political or mercantile clusters of neighbouring countries that had a place in the larger international system. End of the Cold War has reduced the effects of the global system on regional security dynamics and national decisions. Thus, "an end to the bipolar cleavage has led to a restoration of regional sovereignty" and to the establishment of "several regional powers dominating their geographical areas". Changes in the international structure and new security challenges were expected to push the development of regionalism.

In the post-Cold War international system, even though there has been an increasing demand for external intervention and crisis management for humanitarian and other political reasons, neither the United States nor any other major power has shown a willingness to shoulder the full responsibility for managing these regional crises. As a solution to this dilemma, countries go for the establishment of a regional blocks to replace global hegemony.

Currently, Economists take regions as institutionally granted, for example, the European Union (EU), North American Free Trade Agreement (NAFTA), ASEAN, proposed Trans-Atlantic Trade and Investment

Partnership (TTIP), etc. to study changes in the shares of intra- and interregional trade.

In the economic sphere, however, the situation is quite different. The process of globalization, although partial and variable in nature, is creating an increasingly autonomous economic reality that interacts directly with both national and regional economies. The formation of regions takes place at the interface between global economic and technological forces and national realities. National actors may, in fact, perceive regionalism as a defence mechanism against the competitive pressures arising from the globalization.

With respect to the world, regionalism is often talked in two sense i.e. – OLD Regionalism and NEW Regionalism. Both have different meaning, which we will see further.

### **OLD Regionalism**

Old regionalism was formed in context of a bipolar Cold War. That time various regions of the world, made an association with the two major power blocks of the world i.e. USA and USSR. This regionalism was done on the basis of their security and economic concerns. This old pattern of hegemonic regionalism was of course most evident in Europe before 1989, but at the height of the Cold War discernible in all world regions.

Old regionalism was created “from above” (often through superpower intervention). It was inward oriented and protectionist in economic terms. It was also specific with regard to its objectives (some organizations being security oriented, others economically oriented). The old regionalism was concerned only with relations between nation states.

<u><b>Old Order</b></u>	<u><b>New Order</b></u>
<u>Nation-states</u>	<u>Global society</u>
Sovereignty	Interdependency
National interest	Common Interest
Unilateralism	Reciprocity
Assertiveness	Respect
<u>National power politics</u>	<u>New multilateralism</u>
Competing blocs	Global networks
Fixed alliances	Multiple coalitions
Predominance	Bargaining for compromise
Hard Power	Soft Power
<u>Promotion of singular economic models and political values</u>	<u>Coexistence of diverse models of market economy and political systems</u>

### **NEW Regionalism**

The New regionalism is taking shape in a multipolar world order. The new regionalism and multi-polarity are, in fact, two sides of the same coin. The new is a more spontaneous process from within the regions, where the constituent states now experience the need for cooperation in order to tackle new global challenges. Regionalism is thus one way of coping with global transformation, since most states lack the capacity and the means to manage such a task on the “national” level.

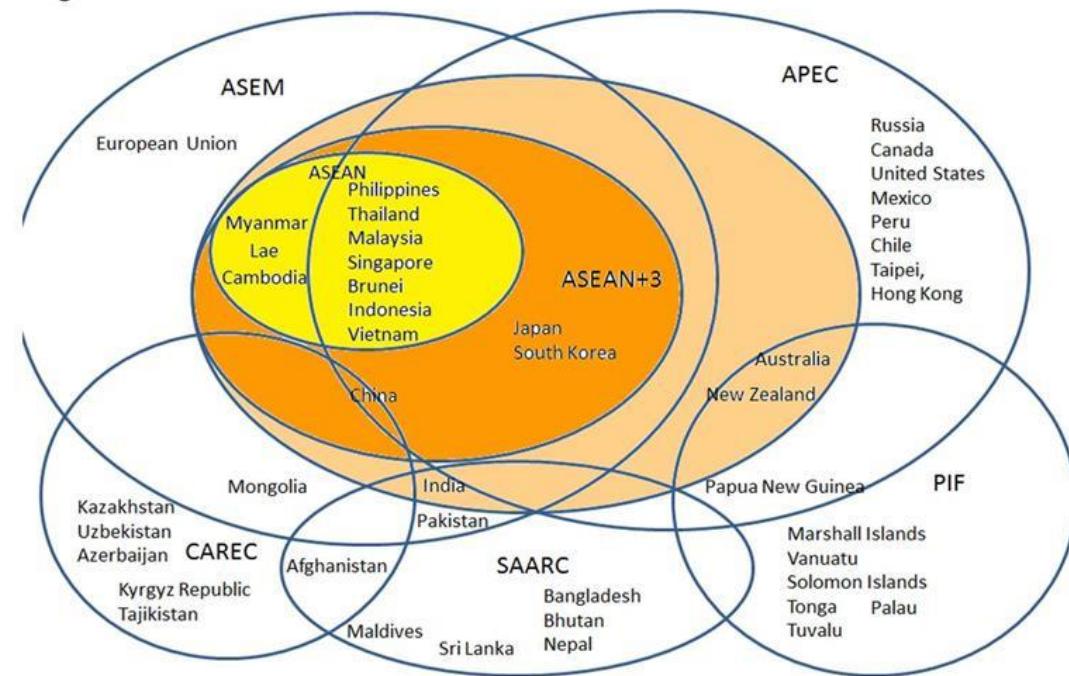
The new is often described as “open”, and thus compatible with an interdependent world economy. It is a more comprehensive, multidimensional process. This process includes not only trade and economic development, but also environment, social policy and security, just to mention some imperatives pushing countries and communities towards cooperation within new types of regionalist frameworks.

The New regionalism forms part of a global structural transformation in which non-state actors (many different types of institutions, organizations and movements) are also active and operating at several levels of the global system.

In sum, the new regionalism includes economic, political, social and cultural aspects, and goes far beyond free trade. Rather, the political ambition of establishing regional coherence and regional identity seems to be of primary importance. The new regionalism is linked to globalization, as it is seen as reaction to the selectiveness nature of the globalization. So, in future, new regionalism could be basis for multilateralism.

### Impact of Regionalism on the World

**Regional Economic Institutions in Asia-Pacific**



**Regionalism** is giving strength to the regions which were earlier neglected like Africa, South Asia, and South East Asia. The consequences of regionalization are in terms of security and development. For example, SAARC, Indian Ocean Rim Association for Regional Cooperation (IOR-ARC) and various other regional groups has been formed for the regional security and development with the cooperation of all the member nations.

It may offer solutions to development problems, which in fact could be seen as a form of conflict prevention, since many of the internal conflicts are rooted in development problems of different kinds.

It helps the regions and the countries within in achieving Self-reliance, with respect to their social development, economic needs, technological needs, etc.

With the help of regionalism economic policies may remain more stable and consistent. As it is, in practice in European Union, though Eurozone crisis is learning for the member nation to create an environment for more predictable and stable economic environment.

Regionalism gives collective bargaining on the level of the region could improve the economic position of marginalized countries in the world system. As in the case of WTO Bali meet, developed countries were hell-bent on Trade facilitation agreement and were pressurizing for doing away of subsidies in developing countries. Then the South Asian countries like China and India, resisted and projected their socio-economic conditions to continue with their present subsidy schemes to their farmers.

Regionalism can reinforce societal viability by including social security issues and an element of redistribution. Ecological and political borders rarely coincide. Few serious environmental problems could be solved within the framework of the nation state. For example conservation of Biodiversity is closely monitored, poaching and trade of endangered species is easy to check with regional cooperation. Check on

emission of greenhouse gases and global warming under common but differentiated responsibilities.

Diversity may make the success of regional organizations problematic. Sometimes, ethnic clashes in some other country of the region causes security challenges in neighbouring countries and destabilize the region as a whole. For example Fundamentalist approach by ISIS or Al-Qaeda or any other terrorist outfit of the region has serious implication in countries like Iran, Syria, Egypt, Pakistan, Afghanistan, etc. Even ethnic clashes in Myanmar, Pakistan disturbs the Indian society. As it was observed in case of violence in Assam due to clashes in Myanmar's Rakhine state.

The growing regionalism is seen as a threat to the multilateral institutions like WTO and its existence and role is being questioned. The growing bilateralism, trilateralism blocks have serious implication on the effectively of the WTO policies.

In fact, Regional conflicts could be resolved, with the help of regionalism and it eliminates distorted investment patterns, since the "security fund" (military expenditures) can be tapped for more productive use and can give peaceful dividend to the nation as well as to the region.

### **Conclusion**

We have seen how regionalism could be good or bad for a nation as well for group of nations. Constitution of India under Article-19, gives every citizen a fundamental right to move around and settle down peacefully any part of the country. And, as citizen of India everyone should respect this fundamental right of every person, avoiding clashes like Shiv Sena does in Maharashtra.

The need of the hour is to develop each region of India, through devolution of power to local governments and empowering people for their participation in decision-making. The governments at state level need to find out the alternative resources of energy, source of employment for local people, use of technology in governance, planning and for agriculture development. The 12<sup>th</sup> five year targets for "**Faster, sustainable and more inclusive growth**", which will be instrumental for balanced regional growth.

The regional blocks like BRICS, ASEAN are developing more negotiation capabilities for economic needs of the region, for climate change negotiations, etc. The dependency on World Bank, IMF for developmental projects is being complimented by the new commitments of the BRICS Bank, New Developmental Banks, etc.

In future, the further integration of the different regions will give every nation due respect and due importance to their needs. Their exotic and unique things are getting exposure at international level and no one will feel left out. The whole world will be a global village with unique regions within.

### **The Bretton Woods system**

Many of us do not know how is money been valued? What was the first system used to value the money? In what ratio the government is printing money every year? Do they print according to the requirement of the money in the market? Or according to the supply and demand forces in the market? Or is there any regime for it? That they have to follow? Do they have an upper limit for printing the notes? Or a lower limit to print these notes? Well to all these questions the answer is yes, every government has to manage the printing of the money and it does have an upper limit to it and a lower limit to work in favour of the economies because regulation of the money and currencies is very important for the development of the economy. And there are regimes to be followed by all the countries.

**What is a regime?** Well, regime basically means a system that has been used for valuation of the currencies. There are basically three systems established till the date for the valuation of the currency which was used all over the globe for significant periods and how it had an impact on the exchange rate between the currencies and these were called as exchange rate regimes.

**The Bretton wood system also known as the IMF fixed exchange rate system.**

Representative of 45 major economies met at Bretton Woods the USA in July 1944 to finalize a new exchange rate system based on stability and flexibility to be universally implemented after the second world war.

Deliberations during this meeting resulted in the formation of the two international multi-lateral institutions namely:

- International monetary fund (IMF)
- International bank for reconstruction and development (IRDB)

The fixed exchange rate system proposed by them was implemented in the year 1946. The main features of this system were as follows:

In addition to gold, the US dollar USD was to be given the status of universal reserve asset. This means countries could issue domestic money against USD reserves. The value of USD was fixed at 1 ounce of gold = USD 35.

The US federal bank provided an unconditional guarantee to buy and sell an unlimited quantity of gold at this price. This was the gold convertibility.

No other country was required to provide for redemption of its currency against gold were not were they required to fix an official gold price.

Each member country was required to fix a parity value for its currency against USD (the process of fixing the value of the currency as a multiple of another currency is called pegging). The actual rate or multiple is called parity. The equality between gold and domestic currency which was the basis for establishing exchange rates was called the par value mechanism.

Effectively every currency was redeemable in terms of USD and only USD was redeemable in terms of gold. Therefore, this system was also called the gold exchange standard. The USD, therefore, became the means of international settlements.

Variation in the exchange rate was permitted on either side of the parity in a range of (+/-) 1%.

The end points of the variation zone were called supports points or intervention points.

The IMF provides a commitment to the member countries to provide financial assistance to countries facing temporary balance of payment deficits.

In the case of structural imbalances member countries could devalue their currencies in consultation with the IMF. On account of the flexibility, the system was also viewed as "THE adjustable peg system".

The concept of the dual exchange rate was abolished.

The system introduced the concept of central bank intervention as a means of ensuring the protection of parity rates (intervention means the proactive participation of a central bank in the domestic markets with the intention of influencing exchange rate movement).

All the member countries accepted the supervisory authority of the IMF in regards to the exchange rate system and domestic foreign exchange market. This was the first instance in history when all the countries of the world voluntarily accepted to give up a part of their sovereignty (freedom to decide) in connection with their foreign exchange management system.

The Bretton Woods system failed cause of the following reasons:

- No change in the rates of the gold.
- The system did not provide for any evaluation of parties.
- No revision in the price of the gold in terms of USD.
- The continued trade deficit of the US created an oversupply of in the international financial markets which reduced the acceptance of the USD. This failure on the part of the US led to the system in 1971.

So this was the Breton Woods system adopted to overcome the drawbacks of the gold standard regime. Which also led to failure and then finally the flexible exchange rate system was formed to overcome the drawbacks of this system.

### Bretton Woods Conference

The United Nations Monetary and Financial Conference, commonly known as Bretton Woods conference, was held in Bretton Woods, New Hampshire, USA to regulate the international monetary and financial order after the conclusion of World War II. The conference resulted in the agreements to set up the International Bank for Reconstruction and Development (IBRD)- popularly known as World Bank and the International Monetary Fund (IMF). The IMF was set up to foster monetary stability at global level. The IBRD was created to speed up post-war reconstruction. The two institutions are known as the Bretton Woods twins.

### IMF

The International Monetary Fund, a UN specialised agency, was established under the Bretton Woods Agreement in 1944 along with the World Bank. It has 187 members (2011). It is headquartered in Washington and its Managing Director is Christine Lagarde. It started functioning in 1947.

#### **IMF objectives are:**

- To promote international monetary cooperation
- To facilitate balanced growth of international trade for the economic growth of all member countries
- To promote exchange rate stability; maintain orderly exchange rate arrangements; and to avoid competitive exchange rate revaluation
- To help members in times of balance of payments crisis.

### SDRs

The SDR is an international reserve asset, created by the IMF in 1969 to supplement its member countries' official reserves. Its value is based on a basket of four key international currencies- dollar, euro, yen and pound. SDRs can be exchanged for national currencies.

SDR is neither a currency, nor a claim on the IMF. Rather, it is a potential claim on the freely usable currencies of IMF members. Holders of SDRs can obtain these currencies in exchange for their SDRs.

For Detail Description, Analysis and More MCQs of the Chapter Buy this Study Notes:

### **World Bank Group and World Bank**

The World Bank Group (WBG) is a family of five international organizations that gives loans, generally to poor countries. The Bank came into existence in 1945 following international ratification of the Bretton Woods agreements, which emerged from the United Nations Monetary and Financial Conference (1944). It is responsible for the preparation of the World Development Report. Commencing operations in 1946, it began operations for post-war reconstruction. Its current role is different as its focus is to lend to and develop the poor countries and help fight poverty in all its facets.

The Group's headquarters are in Washington. It is an international organization owned by member governments; although it makes profits, these profits are used to support continued efforts in poverty escalation.

Technically the World Bank is part of the United Nations system, but its governance structure is different: each institution in the World Bank Group is owned by its member governments, which subscribe to its basic share capital, with votes proportional to shareholding. Membership gives certain voting rights that are the same for all countries but there are also additional votes which depend on financial contributions to the organization. The President of the World Bank is conventionally an American and currently is Robert Zoellick. There are 187 countries in the WB today. Tuvalu is the 187th member of WB.

#### **Its five agencies are:**

- International Bank for Reconstruction and Development (IBRD)

- International Development Association (IDA)
- International Finance Corporation (IFC)
- Multilateral Investment Guarantee Agency (MIGA)
- International Centre for Settlement of Investment Disputes (ICSID)

### **IBRD**

The International Bank for Reconstruction and Development (IBRD) is one of five institutions that comprise the World Bank Group. The IBRD is an international organization whose original mission was to finance the reconstruction of nations devastated by World War II. Now, its mission has expanded to fight poverty by means of financing states.

### **IDA**

The International Development Association (IDA), is the part of the World Bank that helps the world's poorest countries. It complements the World Bank's other lending arm the International Bank for Reconstruction and Development (IBRD) — which serves middle-income countries with capital investment and advisory services.

IDA was created in 1960 and is responsible for providing long-term, interest-free loans to the world's 80 poorest countries. IDA provides grants and credits with repayment periods of 35 to 40 years.

### **MIGA**

The Multilateral Investment Guarantee Agency (MIGA) is a member of the World Bank group. It was established to promote foreign direct investment into developing countries. MIGA was founded in 1988 and is headquartered in Washington.

MIGA promotes foreign direct investment into developing countries by insuring investors against political risk, advising governments on attracting investment etc.

### **ADB**

ADB is an international development finance institution whose mission is to help its developing member countries reduce poverty and improve the quality of life of their people.

Headquartered in Manila, and established in 1966, ADB is owned and financed by its 67 members, of which 48 are from the region and 19 are from other parts of the globe.

ADB's main partners are government the private sector, non-government organizations development agencies, Community based organizations, and foundations.

### **G-20**

The Group of Twenty (G-20) Finance Ministers and Central Bank Governors was established in 1999 to bring together systemically important industrialized and developing economies to discuss key issues in the global economy. The inaugural meeting of the G-20 took place in Berlin in 1999, hosted by German and Canadian finance ministers.

### **OECD**

The Organisation for Economic Co-operation and Development (OECD) is an international economic organisation of 34 countries founded in 1961 to stimulate economic progress and world trade. It defines itself as a forum of countries committed to democracy and the market economy, providing a platform to compare policy experiences, seeking answers to common problems, identifying good practices, and co-ordinating domestic and international policies of its members.

The OECD originated in 1948. Later, its membership was extended to non-European states. The OECD's headquarters are in Paris.

### What are some of the concerns and criticism about Bretton Woods twins?

- Critics of the World Bank and the IMF are concerned about the **conditionalities** imposed on borrower countries
  - The World Bank and the IMF often **attach loan conditionalities** based on what is termed the '**Washington Consensus**', focusing on liberalisation of trade, investment and privatisation of nationalised industries <*so if India asked for funds from IMF, it might ask India to allow FDI in multi brand retail, to end system of minimum support prices in agriculture, privatize coal India etc.*>
  - Many infrastructure projects financed by the WB Group have **social and environmental implications** for the populations in the affected areas
  - **For example**, World Bank-funded construction of hydroelectric dams in various countries has resulted in the **displacement** of indigenous peoples of the area
  - Criticisms against the **governance structures** which are dominated by industrialized countries <*unwritten rule that president of World Bank will be from USA and Managing Director of IMF from Europe.*> Otherwise who is more qualified than Rajan Bhai to become MD of IMF
  - **Decisions** are made and policies implemented by leading industrialized countries, the G7, because they represent the largest donors **without much consultation with poor and developing countries** <*Countries which would utilize that assistance not even consulted, you see the irony*>
- Let's have a look at Bretton Woods organisations in brief**

#### #1. International Monetary Fund (IMF)

Fundamental mission is to ensure the stability of the international monetary system.



##### ***It does so in 3 ways:***

- Keeping track of the global economy and the economies of member countries(**surveillance role**)
- Lending to countries with balance of payments difficulties (**Lending role**)
- Giving practical help to members (**technical assistance role**)
  - **When?** 1944
  - **Membership:** 188 countries
  - **Headquarters:** Washington, D.C.
  - **Publication-** World Economic outlook

##### ***Objectives:***

- Promote international monetary cooperation
- Facilitate the expansion and balanced growth of international trade;
- Promote exchange stability
- Assist in the establishment of a multilateral system of payments
- Make resources available (with adequate safeguards) to members experiencing balance of payments difficulties

##### ***Functioning of IMF comes under 3 Mains types -***

###### ***Surveillance –***

This involves the monitoring of economic and financial developments and the provision of policy advice , aimed especially at crisis-prevention.

<*Surveillance is the process of appraisal of the exchange rate policies of member countries. In the absence of surveillance, the financial volatility in the world today can become worse*>

We all know, how good it's surveillance is. It failed to predict worse it failed to even recognize the stress in the system which led to financial crisis of 2008. It again failed with the prediction of euro-zone crisis.

###### ***Lending –***

The IMF also to countries with **balance of payments difficulties**, to provide temporary financing and to **support policies aimed at correcting the underlying problems**, loans to low-income countries are also aimed esp. at poverty reduction <*most criticized part, riddled with commonalities we discussed above*>

###### ***Technical Assistance –***

The IMF provides countries with technical assistance and training in its areas of expertise, which it calls **capacity development**

Obviously IMF would need money to perform all these functions. Money is contributed by member states and each country's contribution is fixed in terms of its quota.

#### **Let's learn about Member's Quota in IMF -**

- Quota represents the subscription by a member country to the capital fund of the IMF i.e. its contribution to the IMF
- the quota also forms the basis for determining its drawing rights from the IMF *<simple, more you contribute, more you can withdraw at the time of crisis, fair point>*
- But the quota also determines voting power i.e. if 10% quota, your vote will carry 10% weight *<this seems very undemocratic, gives all the power to rich countries or is it just fair, private companies mein bhi to same hi hota hai, jitni equity, utna vote>*

#### **But how is quota of each country calculated?**

- Quota is calculated using a quota formula
- The **current Quota formula** is a weighted average of GDP (50%), openness (30 %), economic variability (15%), and international reserves (5%)
- In the GDP category, weight of GDP at market exchange rate is 60% and at purchasing power parity rate (PPP) is 40% *<developing countries GDP is more in PPP terms and they want the IMF to change the formula to give greater weightage to GDP at PPP plus frequent revision of quotas as they grow faster>*
- The **largest share** of 17.5 per cent belongs to the USA, while the **smallest share** belongs to Palau (0.001 per cent) *<now think what can tiny Palau do at IMF>*
- Any change in quotas must be **approved by 85% voting power** i.e. USA with more than 15% quota holds virtual veto over all such decisions *<now compare power of US with tiny Palau at IMF>*
- 25% of a country's quota is to be contributed in the form of **SDRs** or foreign exchange and 75 per cent in the country's own currency.

#### **What is this Special Drawing Rights or SDR?**

Bretton Woods established an international monetary system of **fixed exchange rates pegged to dollar which was roughly pegged to gold known as gold exchange standard** i.e. for every unit of currency fixed amount of dollars could be bought and with those dollars fixed amount of gold.

But with high trade growth in world resources did not keep pace with the growth in international trade because there simply wasn't enough gold. World needed some other asset to supplement shortfall in dollar and gold and IMF brought in SDR. But in 1971 gold standard and dollar peg collapsed and world moved to flexible exchange rate system. Role of SDR as international reserve asset diminished.

The value of the SDR is based on a basket of key international currencies (weighted avg value). With the addition of Renminbi, 5 currencies, dollar, yen, euro and pound-sterling form the SDR basket. (Renminbi value will be taken into account from Oct 1, 2016 only)

Please remember that SDR is not a currency i.e. it is not a claim on the IMF. On the other hand, SDR is a claim on the countries whose currency is included in the SDR basket. (claim as is written on your 500 rs note with Rajan's signature: I promise to pay the bearer the sum of 500 rupees)



Now, it has primarily become a **unit of account** i.e. IMF record keeping is done in SDR, Quotas are allocated in SDR.

- SDRs are entitlements granted to member-countries enabling them to draw from the IMF apart from their quota. It is similar to a bank granting a credit limit to the customer
- When SDRs are allocated the country's Special Drawing Account with the IMF is credited with the amount of the allotment
- Originally, SDRs were to be utilised only for meeting BOP difficulties. But as a consequence of endeavours to make it an international unit of account, the use of SDRs has been liberalised

#### **Current Position of SDR:**

- Now SDRs can be used directly among the members without the approval of the IMF
- A country may swap SDRs with another country to acquire a currency it desires. SDRs may be utilised to pay charges to IMF
- SDR has gained importance both as a **reserve asset and as a unit of settlement of international transactions**. Some countries have pegged their currencies to SDR.

#### **Reforming the IMF**

##### **Role of IMF was criticized for following reasons –**

- **One size fits all policy** under which it gives the same recipe for all ills
  - **Conditionalities** that go with the loans that it disburses demand that spending on poor be curtailed <*privatize your industries, stop subsidies, open up your markets etc.*>
  - The private international flows are huge and in comparison, the IMF resource base is small and so is rendered **ineffective**
  - **IMF MD is invariably from a European** country, so India and other emerging markets are demanding that it should not be geographically confined and **be merit – based**
  - India wants that its **economic power** as it is emerging should be **recognised** and so is given greater **voting rights**
  - **IMF failed to** predict the global recession in 2008-09, let alone prevent it with its surveillance mode
- IMF recently passed long standing reform of changing quota share of member countries after US Senate withdrew its virtual veto. **A few points**

1. With this structural shift, more than 6 % of the quota, including both the Fund's **capital and voting rights**, have been transferred from developed to emerging economies
2. India's voting rights **increase to 2.6 per cent** from the current 2.3 per cent, and **China's**, to 6 per cent from 3.8, as per the new division.
3. All the directors on IMF board will now be **elected** and developed countries will not be able to nominate (earlier Europeans and US used to nominate up to 4 members to the board)
4. Total resource base of IMF has doubled

To follow the newscards related to IMF as they are pushed, follow this story, [IMF and India](#)

### **India and the IMF equation -**

- India and IMF have had an amicable relationship, which has been beneficial for both. IMF has provided India with loans over the years and this has helped the country in times of Balance Of Payments (BOP) crisis pressure
- India joined the IMF in 1945, as one of the original founding members
- IMF credit has been instrumental in helping India respond to emerging BOP problems on 2 occasions
- In 1981-82, India borrowed SDR 3.9 billion
- In 1991-93, India borrowed a total 2.2 billion under 2 stand by arrangements, and in 1991 it borrowed SDR 1.4 billion under Compensatory Financing Facility

***As a member of the Fund, India has derived following benefits:***

#### **Foreign Exchange for Meeting BOP Deficits:**

Such drawings of foreign exchange have enabled the country to tide over the acute foreign exchange crisis and to maintain the imports of essentials goods

#### **Oil Facility from the IMF:**

India resorted to drawals from the IMF under the Oil Facility created in June, 1974 to meet larger outlays for the import of petroleum crude.

#### **Assistance under SDRs:**

The SDRs provide unconditional liquidity since the participants have access to foreign exchange resources at will.



- The country has made use of the Fund's facilities a number of time **Aid from the World Bank:** The country's membership of the IMF has entitled it to become a member of the World Bank; as a member of the Bank, India has received large technical and financial assistance for the various development projects
- **Assistance under the Extended Credit Facility:** Loan under this facility is contracted at softer terms but there is a serious conditionality clause attached to it
- **Preparation of Valuable Reports:** The country has availed the services of the specialists in the Fund for the purpose of assessing the state of the Indian economy and for preparing valuable reports on various aspects of the economy.

#### **What is meant by Monetary Policy?**

Monetary policy refers to the policy of the central bank – ie Reserve Bank of India – in matters of interest rates, money supply and availability of credit.

It is through the monetary policy, RBI controls inflation in the country.

RBI uses various monetary instruments like REPO rate, Reverse RERO rate, SLR, CRR etc to achieve its purpose. (This is explained well in one of our earlier articles – basics of economy concepts).

In short, Monetary policy refers to the use of **monetary instruments** under the control of the **central bank** to regulate magnitudes such as interest rates, money supply and availability of credit with a view to achieving the **ultimate objective of economic policy**.

#### **How does Reserve Bank of India get its mandate to conduct monetary policy?**

The Reserve Bank of India (RBI) is vested with the responsibility of conducting monetary policy. This responsibility is explicitly mandated under the Reserve Bank of India Act, 1934.

#### **What is the main goal of Monetary Policy of India?**

Maintain price stability.

The primary objective of monetary policy is to maintain price stability while keeping in mind the objective of growth. Price stability is a necessary precondition to sustainable growth.

To maintain price stability, inflation needs to be controlled. The government of India sets an inflation target for every five years. RBI has an important role in the consultation process regarding inflation targeting. The current inflation targeting framework in India is flexible in nature.

### Flexible Inflation Targeting Framework (FITF)

- **Flexible Inflation Targeting Framework:** Now there is a flexible inflation targeting framework in India (after the 2016 amendment to the Reserve Bank of India (RBI) Act, 1934).
- **Who sets inflation target in India:** The amended RBI Act provides for the inflation target **to be set by the Government of India, in consultation with the Reserve Bank**, once in every five years.
- **Current Inflation Target:** The Central Government has notified **4 percent Consumer Price Index (CPI) inflation as the target** for the period from August 5, 2016, to March 31, 2021, with the upper tolerance limit of 6 percent and the lower tolerance limit of 2 percent.
- **Factors that constitute a failure to achieve the inflation target:** (1) the average inflation is more than the upper tolerance level of the inflation target for any three consecutive quarters, OR (2) the average inflation is less than the lower tolerance level for any three consecutive quarters.

### The Monetary Policy Framework (MPF)

While the Government of India sets the Flexible Inflation Targeting Framework in India, it is the **Reserve Bank of India (RBI) which operates the Monetary Policy Framework of the country**.

- The amended RBI Act explicitly provides the legislative mandate to the Reserve Bank to operate the monetary policy framework of the country.
- The framework aims at **setting the policy (repo) rate** based on an assessment of the current and evolving macroeconomic situation, and **modulation of liquidity conditions to anchor money market rates at or around the repo rate**.
- Note: Repo rate changes transmit through the money market to the entire financial system, which, in turn, influences aggregate demand – a key determinant of inflation and growth.
- Once the repo rate is announced, the operating framework designed by the Reserve Bank envisages liquidity management on a day-to-day basis through appropriate actions, which aim at anchoring the operating target – the weighted average call rate (WACR) – around the repo rate.

### Monetary Policy Committee (MPC)

Now in India, the policy interest rate required to achieve the inflation target is decided by the Monetary Policy Committee (MPC). MPC is a six-member committee constituted by the Central Government (Section 45ZB of the amended RBI Act, 1934).

The MPC is required to meet **at least four times in a year**. The quorum for the meeting of the MPC is four members. Each member of the MPC has one vote, and in the event of an equality of votes, the Governor has a second or casting vote.

**The resolution** adopted by the MPC is published after the conclusion of every meeting of the MPC. Once in every six months, the Reserve Bank is required to publish a document called the **Monetary Policy Report** to explain: (1) the sources of inflation and (2) the forecast of inflation for 6-18 months ahead.

### The present Monetary Policy Committee (MPC)

The Central Government in September 2016 constituted the present MPC as under:

1. Governor of the Reserve Bank of India – Chairperson, *ex officio*;
2. Deputy Governor of the Reserve Bank of India, in charge of Monetary Policy – Member, *ex officio*;
3. One officer of the Reserve Bank of India to be nominated by the Central Board – Member, *ex officio*;
4. Shri Chetan Ghate, Professor, Indian Statistical Institute (ISI) – Member;
5. Professor Pami Dua, Director, Delhi School of Economics – Member; and
6. Dr. Ravindra H. Dholakia, Professor, Indian Institute of Management, Ahmedabad – Member. (Members referred to at 4 to 6 above, will hold office for a period of four years or until further orders, whichever is earlier.)

### The Monetary Policy Process (MPP)

**The Monetary Policy Committee (MPC)** determines the policy interest rate required to achieve the inflation target.

**The Reserve Bank's Monetary Policy Department (MPD)** assists the MPC in formulating the monetary policy. Views of key stakeholders in the economy and analytical work of the Reserve Bank contribute to the process for arriving at the decision on the **policy repo rate**.

**The Financial Markets Operations Department (FMOD)** operationalises the monetary policy, mainly through day-to-day liquidity management operations.

**The Financial Market Committee (FMC)** meets daily to review the liquidity conditions so as to ensure that the operating target of monetary policy (weighted average lending rate) is kept close to the policy repo rate. This parameter is also known as weighted average call money rate (WACR).

### Monetary Policy Instruments (MPI)

There are several direct and indirect instruments that are used for implementing monetary policy.

1. **Repo Rate:** The (fixed) interest rate at which the Reserve Bank provides overnight liquidity to banks against the collateral of government and other approved securities under the liquidity adjustment facility (LAF).
2. **Reverse Repo Rate:** The (fixed) interest rate at which the Reserve Bank absorbs liquidity, on an overnight basis, from banks against the collateral of eligible government securities under the LAF.
3. **Liquidity Adjustment Facility (LAF):** The LAF consists of overnight as well as term repo auctions. Progressively, the Reserve Bank has increased the proportion of liquidity injected under fine-tuning variable rate repo auctions of range of tenors. The aim of term repo is to help develop the inter-bank term money market, which in turn can set market-based benchmarks for pricing of loans and deposits, and hence improve transmission of monetary policy. The Reserve Bank also conducts variable interest rate reverse repo auctions, as necessitated under the market conditions.
4. **Marginal Standing Facility (MSF):** A facility under which scheduled commercial banks can borrow an additional amount of overnight money from the Reserve Bank by dipping into their Statutory Liquidity Ratio (SLR) portfolio up to a limit at a penal rate of interest. This provides a safety valve against unanticipated liquidity shocks to the banking system.
5. **Corridor:** The MSF rate and reverse repo rate determine the corridor for the daily movement in the weighted average call money rate.
6. **Bank Rate:** It is the rate at which the Reserve Bank is ready to buy or rediscount bills of exchange or other commercial papers. The Bank Rate is published under Section 49 of the Reserve Bank of India Act, 1934. This rate has been aligned to the MSF rate and, therefore, changes automatically as and when the MSF rate changes alongside policy repo rate changes.
7. **Cash Reserve Ratio (CRR):** The average daily balance that a bank is required to maintain with the Reserve Bank as a share of such percent of its Net demand and time liabilities (NDTL) that the Reserve Bank may notify from time to time in the Gazette of India.
8. **Statutory Liquidity Ratio (SLR):** The share of NDTL that a bank is required to maintain in safe and liquid assets, such as unencumbered government securities, cash and gold. Changes in SLR often influence the availability of resources in the banking system for lending to the private sector.
9. **Open Market Operations (OMOs):** These include both, outright purchase and sale of government securities, for injection and absorption of durable liquidity, respectively.
10. **Market Stabilisation Scheme (MSS):** This instrument for monetary management was introduced in 2004. Surplus liquidity of a more enduring nature arising from large capital inflows is absorbed through the sale of short-dated government securities and treasury bills. The cash so mobilised is held in a separate government account with the Reserve Bank.

### Summary

Monetary policy refers to the use of **monetary instruments** under the control of the **central bank** to regulate magnitudes such as interest rates, money supply and availability of credit with a view to achieving the **ultimate objective of economic policy**.

**The major changes in the Indian Monetary policy during the decade of 1990.**

**Reduced Reserve Requirements** : During 1990s both the Cash Reserve Ratio (CRR) and the Statutory Liquidity Ratio (SLR) were reduced to considerable extent. The CRR was at its highest 15% plus and additional CRR of 10% was levied, however it is now reduced by 4%. The SLR is reduced from 38.5% to a minimum of 25%.

**Increased Micro Finance** : In order to strengthen the rural finance the RBI has focused more on the Self Help Group (SHG). It comprises small and marginal farmers, agriculture and non-agriculture labour, artisans and rural sections of the society. However still only 30% of the target population has been benefited.

**Fiscal Monetary Separation** : In 1994, the Government and the RBI signed an agreement through which the RBI has stopped financing the deficit in the government budget. Thus it has separated the Monetary policy from the fiscal policy.

**Changed Interest Rate Structure** : During the 1990s, the interest rate structure was changed from its earlier administrated rates to the market oriented or liberal rate of interest. Interest rate slabs are now reduced up to 2 and minimum lending rates are abolished. Similarly, lending rates above Rs. Two Lakhs are freed.

**Changes in Accordance to the External Reforms** : During the 1990, the external sector has undergone major changes. It comprises lifting various controls on imports, reduced tariffs, etc. The Monetary policy has shown the impact of liberal inflow of the foreign capital and its implication on domestic money supply.

**Higher Market Orientation for Banking** : The banking sector got more autonomy and operational flexibility. More freedom to banks for methods of assessing working funds and other functioning has empowered and assured market orientation.

#### Square Evaluation of Monetary Policy in India

During the reforms though the Monetary policy has achieved higher success in the Monetary policy, it is not free from limitation or demerits. It needs to be evaluated on a proper scale.

**Failed in Tackling Budgetary Deficit** : The higher level of the budget deficit has made the Monetary policy ineffective. The automatic monetization of the deficit has led to high Monetary expansion.

**Limited Coverage** : The Monetary policy covers only commercial banking system leaving other non-bank institutions untouched. It limits the effectiveness of the Monetary Policy in India.

**Unorganized Money Market** : In our country there is a huge size of the unorganized money market. It does not come under the control of the RBI. Thus any tools of the Monetary policy does not affect the unorganized money market making Monetary policy less effective.

**Predominance of Cash Transaction** : In India still there is huge dominance of the cash in total money supply. It is one of the main obstacles in the effective implementation of the Monetary policy. Because Monetary policy operates on the bank credit rather on cash.

**Increase Volatility** : As the Monetary policy has adopted changes in accordance to the changes in the external sector in India, it could lead to a high amount of the volatility.

There are certain drawbacks in the working of the Monetary Policy in India. However, during the economic reforms it has got different dimensions.

#### India's Foreign Trade: Policy and trends(International Business)

Foreign Trade is the important factor in economic development in any nation. Foreign trade in India comprises of all imports and exports to and from India. The Ministry of Commerce and Industry at the level of Central Government has responsibility to manage such operations. The domestic production reveals on exports and imports of the country. The production consecutively depends on endowment of factor availability. This leads to relative advantage of the financial system. Currently, International trade is a crucial part of development strategy and it can be an effective mechanism of financial growth, job opportunities and poverty reduction in an economy. According to Traditional Pattern of development, resources are transferred from the agricultural to the manufacturing sector and then into services.

**Historical review:** Foreign trade in India began in the period of the latter half of the 19th century. The period 1900-1914 saw development in India's foreign trade. The augment in the production of crops as oilseeds, cotton, jute and tea was mainly due to a thriving export trade. In the First World War, India's foreign trade decelerated. After post-war period, India's exports increased because demand for raw materials was increased in all over world and there were elimination of war time restrictions. The imports also increased to satisfy the restricted demand. Records indicated that India's foreign trade was rigorously affected by the great depression of 1930s because of decrement in commodity prices, decline in consumer's purchasing power and unfair trade policies adopted by the colonial government. During the Second World War, India accomplished huge export surplus and accumulated substantial amount of real balances. There was a huge pressure of restricted demand in India during the Second World War. The import requirements were outsized and export surpluses were lesser at the end of the war. Before independence, India's foreign trade was associated with a colonial and agricultural economy. Exports consisted primarily of raw materials and plantation crops, while imports composed of light consumer merchandise and other manufactures. The structure of India's foreign trade reflected the organized utilization of the country by the foreign leaders. The raw materials were exported from India and finished products imported from the U.K. The production of final products were discouraged. For instance, cotton textiles, which were India's exports, accounted for the largest share of its imports during the British period. This resulted in the decline of Indian industries. Since last six decades, India's foreign trade has changed in terms of composition of commodities. The exports included array of conventional and non-traditional products while imports mostly consist of capital goods, petroleum products, raw materials, intermediates and chemicals to meet the ever increasing industrial demands. The export trade during 1950-1960 was noticeable by two main trends. First, among commodities which were directly based on agricultural production such as tea, cotton textiles, jute manufactures, hides and skins, spices and tobacco exports did not increase on the whole, and secondly, there was a significant boost in the exports of raw manufactures such as iron ore. In the period of 1950 to 1951, main products dominated the Indian export sector. These included cashew kernels, black pepper, tea, coal, mica, manganese ore, raw and tanned hides and skins, vegetable oils, raw cotton, and raw wool. These products comprised of 34 per cent of the total exports. In the period of 1950s there were balance of payments crunch. The export proceeds were not enough to fulfil the emerging import demand. The turn down in agriculture production and growing pace of development activity added pressure. The external factors such as the closure of Suez Canal created tension on the domestic financial system. The critical problem at that moment was that of foreign exchange scarcity. The Second Five Year Plan with its emphasis on the development of industry, mining and transport had a large foreign exchange factor. This tension on the balance of payments required the stiffening of import strategy at a later stage.

**Table: Measures initiated in India to Influence Foreign Trade during 1949-1950 to 1979-1980**

Plans	Policy Measures
<b>First Plan</b>	The desire to save foreign exchange reserves was expressed in the first five year plan (1951-1956). To control and regulate exports and imports in the certain select commodities state trading was considered necessary plan.
<b>Second Plan</b>	Since the middle of second five year plan (1956-1961) a series of measures were initiated with the objective of stepping up exports. The measures in question were fairly widely conceived and included organizational changes, increased facilities and incentives and diversification of trade.
<b>Third Plan</b>	<p>The third five year plan (1961-1965) provided various measures for expanding exports. The plan divided the expanding of exports under two groups namely.</p> <ol style="list-style-type: none"> <li>1. General policies</li> </ol>



	<p>2. Measures relating to specific commodities.</p> <p>Further the third five year plan asked for the availability of surpluses for exports at prices competitive with those of other suppliers in international markets. The third plan tried to explore the possibility of supplementing export earnings with external assistance.</p>
<b>Annual Plan</b>	<p>The three Annual Plans (1966-1969) began with the devaluation of rupee on 6<sup>th</sup> June 1966 to solve the balance of payment problems and trade problem. This was followed by import liberalization policies. The principal policy measures taken with devaluation included liberal import policy for 59 priority industries in which arrangements were made to meet the requirements for raw materials, components and spares in full (Initially for six months). Further modifications, adjustments and extensions in export policies were initiated.</p>

<b>Fourth Plan</b>	<p>The Fourth five year plan (1969-1974) stated that export quotas should be kept to the minimum, specially in case of primary agricultural products, unless there were overriding considerations to justify such action. The fourth plan laid stress on adequate provision for modernization and rehabilitation of manufacturing units as part of export promotion efforts in case of traditional exports. For increasing exports of non-traditional items, special emphasis was placed on wider publicity.</p>
<b>Fifth Plan</b>	<p>In order to have sustained level of growth rate of exports during the fifth five year plan (1974-1979), the exploitation of both supply and demand were considered necessary for export of products of manufacturing sector. This plan laid emphasis on tapping markets where India enjoyed distinct locational advantages.</p>

Source: Inputs from various issues of Economic Survey, Ministry of Finance, Government of India, New Delhi.

In the age of globalisation, India is new entrant to expand international trend. In 1991, the government initiated some changes in its strategy on trade, foreign Investment, Tariffs and Taxes under the name of "New Economic Reforms". Indian government mainly concentrated on reforms on Liberalization, openness and export sponsorship activity. It is witnessed that foreign Trade of India has considerably revolutionized export in the Post reforms period. Trade Volume increased and the composition of exports has undergone several noteworthy changes. In Post - reform Period, the major provider to export's growth has been the manufacturing sector.

Though India has steadily opened up its wealth, its tariffs are high as compared with other countries, and its conjecture norms are still restricted. Foreign trade in India in legal term is the Foreign Trade (Development and Regulation) Act, 1992. The Act provide with the development and regulation of foreign trade by assisting imports into, and supplementing exports from India. To fulfil the requirements of the Act, the government may make necessities for assisting and controlling foreign trade, may forbid, confine and regulate exports and imports, in all or particular cases as well as subject them to exclusion. Government is endorsed to devise and declare an export and import policy and also amend the same from time to time, by notification in the Official Gazette, and is also authoritative to appoint a 'Director General of Foreign Trade' for the purpose of the Act, including formulation and accomplishment of the export-import policy.

**The 15X15 Matrix Strategies** was introduced in 1995 and major aim of this policy was to recognize market diversification and commodity diversification. When reviewed the success of this, it represented that the share of the total top 15 product groups exported to the top 15 market destinations declined from 71% in 1996-97 to 66% in 2000-01 in respect of the total export of these 15 product groups for all destinations taken together. It clearly showed the market diversification for these product groups. The major items of India's exports controlled in the Matrix continue to remain the same during 2000 - 01 such as Gems and Jewellery, RMG Cotton including accessories and Cotton Yarn, Fabrics and Made Ups. The top three destinations changed from US, UK and Japan to US, Hong Kong and UAE. Another strategy was Focus LAC which was introduced in 1997 in order to enhance exports of chosen products such as Textiles including RMG, Engineering goods and Chemical products to Latin American Region. The highest growth rate of exports to this region was accomplished during period of 2000-01 when the value of exports was high of US\$ 982 million. Though the current trade between LAC and India is still low, there is possibility to increase two-way trade between India and the LAC region. It is observed from the export strategies of previous time is that the composition, competitiveness and complexion of world products trade are changing rapidly and there is a need to review the market constantly for any medium term export strategy to achieve a higher share of global

exports on a sustainable basis. The main concentration of previous foreign trade strategies was on the existing export products of India.

**Nonetheless**, presently, the government has made policy on trade and investment policy that has established an obvious change from protecting 'producers' to benefiting 'consumers'. It is reflected in its foreign trade strategy of India for 2004/09 which indicated that "for India to become a major player in world trade we have also to make possible those imports which are required to stimulate our economy". With numerous economic alterations, globalisation of the Indian economy has been the foremost factor to formulate the trade policies. The announcement of a new Foreign Trade Policy of India for a five year period of 2004-09, substituting until now taxonomy of EXIM Policy by Foreign Trade Policy is major step in the development of foreign trade policy. This policy made the overall development of India's foreign trade and offers guidelines for the development of this sector. Main purpose of the Exim Policy is to hasten the economy from low level of economic activities to high level of economic activities by making it a globally oriented energetic economy and to derive maximum benefits from expanding global market opportunities, to encourage continued economic growth by providing access to essential raw materials, intermediates, components, consumables and capital goods required for augmenting production, to boost the techno local strength and efficiency of Indian agriculture, industry and services, thereby, improving their competitiveness, to generate new employment and opportunities and encourage the attainment of internationally accepted standards of quality. Finally, this policy provides quality consumer products at reasonable prices. A vibrant export-led growth strategy of doubling India's share in global commodities trade with an attention on the sectors having prospects for export development and potential for employment generation, represent the main factor of the policy. These activities augment India's international competitiveness and assist in increasing the suitability of Indian exports. The trade policy recognizes major strategies, outlines export incentives, and also focus on issues relating to institutional support including simplification of procedures relating to export activities. India is now violently pushing for a more moderate global trade management, especially in services. It has understood a leadership role among developing nations in global trade debates, and played a decisive part in the Doha negotiations. With economic reforms, globalisation of the Indian economy has been the major factor in devising the foreign trade policy of India.

Periods	Policy Measures
1990-1991	<ul style="list-style-type: none"> <li>i) New Import -Export policy was formulated.</li> <li>ii) Services exports were encouraged.</li> <li>iii) Replenishment rates were modified to encourage higher value added products.</li> </ul>
1992-1993	<ul style="list-style-type: none"> <li>i) EXIM policy for five years 1992-1997 was implemented.</li> <li>ii) Since 1992 imports were regulated through a limited negative list.</li> </ul>
1994-1995	Under the Duty Exemption Scheme and the Export Promotion of Capital Goods scheme third party exports were given benefits.
1995-1996	<ul style="list-style-type: none"> <li>i) Quantitative restrictions were phased out in the form of licensing and other discretionary controls.</li> <li>ii) More than 3000 tariff lines covering raw materials, intermediates and capital goods were freed of import licensing requirements.</li> <li>iii) Controls on imports were liberalised with only small list of items in negative list.</li> </ul>
1997-1998	EXIM Policy 1997-2002 constituted.
1998-1999	<ul style="list-style-type: none"> <li>i) In wake of the adverse impact of Asian crisis on India's exports , various measures were announced in August and September 1998, such as: <ul style="list-style-type: none"> <li>a) Exports under all export promotion schemes were exempted from Special Additional Duty.</li> <li>b) Simplification of bond-furnishing procedures for exporters.</li> <li>c) Tax holiday for EOU/EPZ to 10 years, etc.</li> </ul> </li> </ul>

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1999-2000	i) Import of 894 items was made license free and another 414 items were allowed to be imported against Special Import License. ii) Free Trade Zones replaced Export Processing Zones. iii) Green card for exporters exporting 50% of their production. iv) Duty free imports of consumables up to certain limits for gems and jewellery, handicrafts and leather sectors. v) Golden status certificates for Export and Trading Houses.
2001-2002	i) Quantitative restrictions removed from 714 tariff lines . ii) Setting up of Special Economic Zones.
2002-2003	Agricultural exports promoted.
2006-2007	Efforts were made to make India hub of gems and jewellery by accelerating their exports.
2008-2009	i) Continued emphasis on Special Economic Zones. ii) Exports duty on Iron ore fines was eliminated.
2010-2011	i) 27 new markets added under the Focus Market Scheme (FMS) with incentive of duty credit scrip at 3% of exports. ii) The Zero duty Export Promotion Capital Goods Scheme and Status Holder Incentive Scrip Scheme introduced in 2009 for limited sectors and valid only for two years initially, extended by one more year till 31 March, 2012 and the benefit of scheme expanded to other sectors.

The objective of the Foreign Trade Policy is to twofold India percentage share of global merchandise trade and to act as an effectual instrument of economic growth by giving a thrust to employment generation, especially in semi-urban and rural areas. The growth performance of exports has been a result of watchful effort of the Government to lessen transaction costs and assist trade. The guidelines of the Foreign Trade Policy (2004-09) for a five year period clearly articulate objectives, strategies and policy initiatives that has been involved in putting exports on a higher growth line.

Reviewing data of exports by Principal Commodities for the period April - October 2006-07, the export growth was largely driven by petroleum products, engineering. Export of other products like Agriculture and Allied Products, Ores and Minerals, Leather and Leather Manufactures, Gems and Jewellery, Chemicals and related Products, Engineering Goods and other commodities are shown below:



There are numerous challenges and issues in foreign trade. These include burden of export promotion schemes, danger of circular trading, and risk of importing outdated machinery. Sometimes policy fails to take

a holistic view of trade issues. Other issue is relative importance of the home market, the nature or the degree of State intervention and recessionary conditions in the global market. India's exports have suffered due to structural constraints operating both on the demand and supply side. On the demand side exports have continued to undergo the problems of adverse world trading environment, protectionist sentiments in the developed countries in the guise of technical standards, environmental and social concerns and tariff differentials in imports by the developed countries. At the supply end, the factors that have constrained exports from India include infrastructure constraints, high transaction costs, inflexibilities in labour laws, quality problems, constraints in attracting FDI in the export sector, etc

It is summarized that foreign trade has significant function in the fiscal development of any nation. India has made strong foreign trade policies and reformed these from time to time with the process of globalisation and liberalization. Since 1991, India's foreign trade considerably transformed. India's major exports include manufacturing and engineering goods. India has good trading relations with all developed countries in the world. More than fifty percent of India's total export trade is with Asia and ASEAN region and about sixty percent of India's total imports is with the same countries. India's wealth previously was agricultural economy. India's major requirement used to be food grains and other goods in import with fast industrialization, the composition of India's imports goods changed and needed chemicals, fertilizers and machinery which were required to meet the developmental requirements of country. In the composition of export; country sells agricultural products such as tea, spices, and other raw materials. However, with the industrialization of the financial system, compositions of exports changed. Currently, India exports products such as machinery chemicals and marine products. This may enhance the fiscal condition of India.

### **Key Highlights of the FTP 2015-20**

Replaced all existing focus product and focus market schemes for goods with a single Merchandise Export from India Scheme. Under the scheme, incentives will be given for export of specific goods to specific markets.

For services, all schemes have been replaced by a Services Export from India Scheme, with a greater thrust on notified services.

Duty credit scrips issued under MEIS and SEIS and the goods imported against these scrips are fully transferable and usable for payment of custom duty, excise duty and service tax.

Extended benefits of both incentive schemes for export of goods & services to units in SEZ

Export obligation under EPCG scheme reduced to 75% to Promote domestic capital goods mfg.

### **Foreign Trade Policy**

### **Targets of FTP 2015-20**

Increase exports to USD 900 billion by 2019-20, from USD 466 billion in 2013-14

Raise India's share in world exports from 2 % to 3.5 %

FTP to be aligned to Make in India, Digital India and Skills India initiatives, with paperless working in 24x7 Environment.

Unlike annual reviews, FTP will be reviewed after two-and-Half years, except for exigencies.

### **Export Promotion Capital Goods (EPCG) Scheme**

As per the Foreign Trade Policy 2009-14 amended later time to time in annual supplements, EPCG Authorization holder is permitted to import capital goods at 0% or 3% Customs duty.

Under the 0% duty, EPCG Authorization holder is required to undertake export obligation equivalent to 6 times of the duty saved amount on the capital goods imported within a period of 6 years.

Under the 3% duty EPCG scheme, the Authorization holder has to fulfill export obligation equivalent to 8 times of the duty saved amount on the capital goods imported in 8 years.

Goods imported cannot be transferred or sold at DTA till the fulfillment of export obligation.

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# UNIT-6

## INDIAN ECONOMY

### **NATIONAL INCOME:**

National income is an uncertain term which is used interchangeably with national dividend, national output and national expenditure. On this basis, national income has been defined in a number of ways. In common parlance, national income means the total value of goods and services produced annually in a country.

**According to Marshall:** "The labour and capital of a country acting on its natural resources produce annually a certain net aggregate of commodities, material and immaterial including services of all kinds. This is the true net annual income or revenue of the country or national dividend." In this definition, the word 'net' refers to deductions from the gross national income in respect of depreciation and wearing out of machines. And to this, must be added income from abroad.

**A.C. Pigou** has in his definition of national income included that income which can be measured in terms of money. In the words of Pigou, "National income is that part of objective income of the community, including of course income derived from abroad which can be measured in money."

### **CONCEPTS OF NATIONAL INCOME:**

There are a number of concepts pertaining to national income and methods of measurement relating to them.

#### **(A) Gross Domestic Product (GDP):**

GDP is the total value of goods and services produced within the country during a year. This is calculated at market prices and is known as GDP at market prices. Dernberg defines GDP at market price as "the market value of the output of final goods and services produced in the domestic territory of a country during an accounting year."

#### **There are three different ways to measure GDP:**

Product Method, Income Method and Expenditure Method.

These three methods of calculating GDP yield the same result because National Product = National Income = National Expenditure.

#### **1. The Product Method:**

In this method, the value of all goods and services produced in different industries during the year is added up. This is also known as the value added method to GDP or GDP at factor cost by industry of origin. The following items are included in India in this: agriculture and allied services; mining; manufacturing, construction, electricity, gas and water supply; transport, communication and trade; banking and insurance, real estates and ownership of dwellings and business services; and public administration and defense and other services (or government services). In other words, it is the sum of gross value added.

#### **2. The Income Method:**

The people of a country who produce GDP during a year receive incomes from their work. Thus GDP by income method is the sum of all factor incomes: Wages and Salaries (compensation of employees) + Rent + Interest + Profit.

#### **3. Expenditure Method:**

This method focuses on goods and services produced within the country during one year.

#### **GDP by expenditure method includes:**

- (1) Consumer expenditure on services and durable and non-durable goods (C),
- (2) Investment in fixed capital such as residential and non-residential building, machinery, and inventories (I),
- (3) Government expenditure on final goods and services (G),
- (4) Export of goods and services produced by the people of country (X),
- (5) Less imports (M). That part of consumption, investment and government expenditure which is spent on imports is subtracted from GDP. Similarly, any imported component, such as raw materials, which is used in the manufacture of export goods, is also excluded.

Thus  $\text{GDP by expenditure method at market prices} = C + I + G + (X - M)$ , where  $(X - M)$  is net export which can be positive or negative.

#### **(B) GDP at Factor Cost:**

GDP at factor cost is the sum of net value added by all producers within the country. Since the net value added gets distributed as income to the owners of factors of production, GDP is the sum of domestic factor incomes and fixed capital consumption (or depreciation).

Thus  $\text{GDP at Factor Cost} = \text{Net value added} + \text{Depreciation}$ .

#### **GDP at factor cost includes:**

- (i) Compensation of employees i.e., wages, salaries, etc.
- (ii) Operating surplus which is the business profit of both incorporated and unincorporated firms. [Operating Surplus = Gross Value Added at Factor Cost – Compensation of Employees – Depreciation]
- (iii) Mixed Income of Self-employed.

Conceptually, GDP at factor cost and GDP at market price must be identical/This is because the factor cost (payments to factors) of producing goods must equal the final value of goods and services at market prices. However, the market value of goods and services is different from the earnings of the factors of production.

In GDP at market price are included indirect taxes and are excluded subsidies by the government. Therefore, in order to arrive at GDP at factor cost, indirect taxes are subtracted and subsidies are added to GDP at market price.

Thus,  $\text{GDP at Factor Cost} = \text{GDP at Market Price} - \text{Indirect Taxes} + \text{Subsidies}$ .

#### **(C) Net Domestic Product (NDP):**

NDP is the value of net output of the economy during the year. Some of the country's capital equipment wears out or becomes obsolete each year during the production process. The value of this capital consumption is some percentage of gross investment which is deducted from GDP. Thus  $\text{Net Domestic Product} = \text{GDP at Factor Cost} - \text{Depreciation}$ .

#### **(D) Nominal and Real GDP:**

When GDP is measured on the basis of current price, it is called GDP at current prices or nominal GDP. On the other hand, when GDP is calculated on the basis of fixed prices in some year, it is called GDP at constant prices or real GDP.

**Nominal GDP** is the value of goods and services produced in a year and measured in terms of rupees (money) at current (market) prices. In comparing one year with another, we are faced with the problem that the rupee is not a stable measure of purchasing power. GDP may rise a great deal in a year, not because the economy has been growing rapidly but because of rise in prices (or inflation).

On the contrary, **GDP** may increase as a result of fall in prices in a year but actually it may be less as compared to the last year. In both 5 cases, GDP does not show the real state of the economy. To rectify the underestimation and overestimation of GDP, we need a measure that adjusts for rising and falling prices.

This can be done by measuring GDP at constant prices which is called real GDP. To find out the real GDP, a base year is chosen when the general price level is normal, i.e., it is neither too high nor too low. The prices are set to 100 (or 1) in the base year.

Now the general price level of the year for which real GDP is to be calculated is related to the base year on the basis of the following formula which is called the deflator index:

$$\text{Real GDP} = \frac{\text{GDP for the Current Year}}{\text{Base Year (}=100\text{)}} \times \frac{1}{\text{Current Year Index}}$$

Suppose 1990-91 is the base year and GDP for 1999-2000 is Rs. 6, 00,000 crores and the price index for this year is 300.

Thus, Real GDP for 1999-2000 = Rs. 6, 00,000  $\times$  100/300 = Rs. 2, 00,000 crores

#### (E) GDP Deflator:

GDP deflator is an index of price changes of goods and services included in GDP. It is a price index which is calculated by dividing the nominal GDP in a given year by the real GDP for the same year and multiplying it by 100. Thus,

$$\text{GDP Deflator} = \frac{\text{Nominal (or Current Prices) GDP}}{\text{Real (or Constant Prices) GDP}} \times 100$$

For example, GDP Deflator in 1997-98 =  $\frac{1426.7\text{th. crores}}{1049.2\text{th. crores at }} \times 100$   
 $= 135.9$

It shows that at constant prices (1993-94), GDP in 1997-98 increased by 135.9% due to inflation (or rise in prices) from Rs. 1049.2 thousand crores in 1993-94 to Rs. 1426.7 thousand crores in 1997-98.

#### (F) Gross National Product (GNP):

GNP is the total measure of the flow of goods and services at market value resulting from current production during a year in a country, including net income from abroad.

##### GNP includes four types of final goods and services:

- (1) Consumers' goods and services to satisfy the immediate wants of the people;
- (2) Gross private domestic investment in capital goods consisting of fixed capital formation, residential construction and inventories of finished and unfinished goods;
- (3) Goods and services produced by the government; and
- (4) Net exports of goods and services, i.e., the difference between value of exports and imports of goods and services, known as net income from abroad.

In this concept of GNP, there are certain factors that have to be taken into consideration: First, GNP is the measure of money, in which all kinds of goods and services produced in a country during one year are measured in terms of money at current prices and then added together.

But in this manner, due to an increase or decrease in the prices, the GNP shows a rise or decline, which may not be real. To guard against erring on this account, a particular year (say for instance 1990-91) when prices be normal, is taken as the base year and the GNP is adjusted in accordance with the index number for that year. This will be known as GNP at 1990-91 prices or at constant prices.

**Second**, in estimating GNP of the economy, the market price of only the final products should be taken into account. Many of the products pass through a number of stages before they are ultimately purchased by consumers.

If those products were counted at every stage, they would be included many a time in the national product. Consequently, the GNP would increase too much. To avoid double counting, therefore, only the final products and not the intermediary goods should be taken into account.

**Third**, goods and services rendered free of charge are not included in the GNP, because it is not possible to have a correct estimate of their market price. For example, the bringing up of a child by the mother, imparting instructions to his son by a teacher, recitals to his friends by a musician, etc.

**Fourth**, the transactions which do not arise from the produce of current year or which do not contribute in any way to production are not included in the GNP. The sale and purchase of old goods, and of shares, bonds and assets of existing companies are not included in GNP because these do not make any addition to the national product, and the goods are simply transferred.

**Fifth**, the payments received under social security, e.g., unemployment insurance allowance, old age pension, and interest on public loans are also not included in GNP, because the recipients do not provide any service in lieu of them. But the depreciation of machines, plants and other capital goods is not deducted from GNP.

**Sixth**, the profits earned or losses incurred on account of changes in capital assets as a result of fluctuations in market prices are not included in the GNP if they are not responsible for current production or economic activity.

**For example**, if the price of a house or a piece of land increases due to inflation, the profit earned by selling it will not be a part of GNP. But if, during the current year, a portion of a house is constructed anew, the increase in the value of the house (after subtracting the cost of the newly constructed portion) will be included in the GNP. Similarly, variations in the value of assets, that can be ascertained beforehand and are insured against flood or fire, are not included in the GNP.

Last, the income earned through illegal activities is not included in the GNP. Although the goods sold in the black market are priced and fulfill the needs of the people, but as they are not useful from the social point of view, the income received from their sale and purchase is always excluded from the GNP.

There are two main reasons for this. One, it is not known whether these things were produced during the current year or the preceding years. Two, many of these goods are foreign made and smuggled and hence not included in the GNP.

### Three Approaches to GNP:

After having studied the fundamental constituents of GNP, it is essential to know how it is estimated. Three approaches are employed for this purpose. One, the income method to GNP; two, the expenditure method to GNP and three, the value added method to GNP. Since gross income equals gross expenditure, GNP estimated by all these methods would be the same with appropriate adjustments.

#### 1. Income Method to GNP:

The income method to GNP consists of the remuneration paid in terms of money to the factors of production annually in a country.

**Thus GNP is the sum total of the following items:**

##### (i) Wages and salaries:

Under this head are included all forms of wages and salaries earned through productive activities by workers and entrepreneurs. It includes all sums received or deposited during a year by way of all types of contributions like overtime, commission, provident fund, insurance, etc.

##### (ii) Rents:

Total rent includes the rents of land, shop, house, factory, etc. and the estimated rents of all such assets as are used by the owners themselves.

**(iii) Interest:**

Under interest comes the income by way of interest received by the individual of a country from different sources. To this is added, the estimated interest on that private capital which is invested and not borrowed by the businessman in his personal business. But the interest received on governmental loans has to be excluded, because it is a mere transfer of national income.

**(iv) Dividends:**

Dividends earned by the shareholders from companies are included in the GNP.

**(v) Undistributed corporate profits:**

Profits which are not distributed by companies and are retained by them are included in the GNP.

**(vi) Mixed incomes:**

These include profits of unincorporated business, self-employed persons and partnerships. They form part of GNP.

**(vii) Direct taxes:**

Taxes levied on individuals, corporations and other businesses are included in the GNP.

**(viii) Indirect taxes:**

The government levies a number of indirect taxes, like excise duties and sales tax.

These taxes are included in the price of commodities. But revenue from these goes to the government treasury and not to the factors of production. Therefore, the income due to such taxes is added to the GNP.

**(ix) Depreciation:**

Every corporation makes allowance for expenditure on wearing out and depreciation of machines, plants and other capital equipment. Since this sum also is not a part of the income received by the factors of production, it is, therefore, also included in the GNP.

**(x) Net income earned from abroad:**

This is the difference between the value of exports of goods and services and the value of imports of goods and services. If this difference is positive, it is added to the GNP and if it is negative, it is deducted from the GNP.

Thus GNP according to the Income Method = Wages and Salaries + Rents + Interest + Dividends + Undistributed Corporate Profits + Mixed Income + Direct Taxes + Indirect Taxes + Depreciation + Net Income from abroad.

**2. Expenditure Method to GNP:**

From the expenditure view point, GNP is the sum total of expenditure incurred on goods and services during one year in a country.

**It includes the following items:**

**(i) Private consumption expenditure:**

It includes all types of expenditure on personal consumption by the individuals of a country. It comprises expenses on durable goods like watch, bicycle, radio, etc., expenditure on single-used consumers' goods like milk, bread, ghee, clothes, etc., as also the expenditure incurred on services of all kinds like fees for school, doctor, lawyer and transport. All these are taken as final goods.

**(ii) Gross domestic private investment:**

Under this comes the expenditure incurred by private enterprise on new investment and on replacement of old capital. It includes expenditure on house construction, factory-buildings, and all types of machinery, plants and capital equipment.

In particular, the increase or decrease in inventory is added to or subtracted from it. The inventory includes produced but unsold manufactured and semi-manufactured goods during the year and the stocks of raw materials, which have to be accounted for in GNP. It does not take into account the financial exchange of shares and stocks because their sale and purchase is not real investment. But depreciation is added.

**(iii) Net foreign investment:**

It means the difference between exports and imports or export surplus. Every country exports to or imports from certain foreign countries. The imported goods are not produced within the country and hence cannot be included in national income, but the exported goods are manufactured within the country. Therefore, the difference of value between exports (X) and imports (M), whether positive or negative, is included in the GNP.

**(iv) Government expenditure on goods and services:**

The expenditure incurred by the government on goods and services is a part of the GNP. Central, state or local governments spend a lot on their employees, police and army. To run the offices, the governments have also to spend on contingencies which include paper, pen, pencil and various types of stationery, cloth, furniture, cars, etc.

It also includes the expenditure on government enterprises. But expenditure on transfer payments is not added, because these payments are not made in exchange for goods and services produced during the current year.

Thus GNP according to the Expenditure Method=Private Consumption Expenditure (C) + Gross Domestic Private Investment (I) + Net Foreign Investment (X-M) + Government Expenditure on Goods and Services (G) = C+ I + (X-M) + G.

As already pointed out above, GNP estimated by either the income or the expenditure method would work out to be the same, if all the items are correctly calculated.

**3. Value Added Method to GNP:**

Another method of measuring GNP is by value added. In calculating GNP, the money value of final goods and services produced at current prices during a year is taken into account. This is one of the ways to avoid double counting. But it is difficult to distinguish properly between a final product and an intermediate product.

For instance, raw materials, semi-finished products, fuels and services, etc. are sold as inputs by one industry to the other. They may be final goods for one industry and intermediate for others. So, to avoid duplication, the value of intermediate products used in manufacturing final products must be subtracted from the value of total output of each industry in the economy.

Thus, the difference between the value of material outputs and inputs at each stage of production is called the value added. If all such differences are added up for all industries in the economy, we arrive at the GNP by value added. GNP by value added = Gross value added + net income from abroad. Its calculation is shown in Tables 1, 2 and 3.

Table 1 is constructed on the supposition that the entire economy for purposes of total production consists of three sectors. They are agriculture, manufacturing, and others, consisting of the tertiary sector.

Out of the value of total output of each sector is deducted the value of its intermediate purchases (or primary inputs) to arrive at the value added for the entire economy. Thus the value of total output of the entire economy as per Table 1, is Rs. 155 crores and the value of its primary inputs comes to Rs. 80 crores. Thus the GDP by value added is Rs. 75 crores (Rs. 155 minus Rs. 80 crores).

**TABLE I : GDP BY VALUE ADDED**

Industry	Total Output	Intermediate Purchases	Value Added (Rs. crores)
(1)	(2)	(3)	(4) = (2-3)
1. Agriculture	30	10	20
2. Manufacturing	70	45	25
3. Others	55	25	30
Total	155	80	75

The total value added equals the value of gross domestic product of the economy. Out of this value added, the major portion goes in the form wages and salaries, rent, interest and profits, a small portion goes to the government as indirect taxes and the remaining amount is meant for depreciation. This is shown in Table 3.

Thus we find that the total gross value added of an economy equals the value of its gross domestic product. If depreciation is deducted from the gross value added, we have net value added which comes to Rs. 67 crores (Rs. 75 minus Rs. 8 crores).

This is nothing but net domestic product at market prices. Again, if indirect taxes (Rs. 7 crores) are deducted from the net domestic product of Rs. 67 crores, we get Rs. 60 crores as the net value added at factor cost which is equivalent to net domestic product at factor cost. This is illustrated in Table 2.

**TABLE 2**  
**VALUE ADDED AT FACTOR COST**

	(Rs. Crores)
1. Market Value of output	155
2. Less: cost of intermediate Goods	80
3. Gross value added	75
4. Less: depreciation	8
5. Net value added or domestic product at market prices	67
6. Less: indirect taxes	7
7. Net value added at factor cost	60

Net value added at factor cost is equal to the net domestic product at factor cost, as given by the total of items 1 to 4 of Table 2 (Rs. 45+3+4+8 crores=Rs. 60 crores). By adding indirect taxes (Rs 7 crores) and depreciation (Rs 8 crores), we get gross value added or GDP which comes to Rs 75 crores.

If we add net income received from abroad to the gross value added, this gives us, gross national income. Suppose net income from abroad is Rs. 5 crores. Then the gross national income is Rs. 80 crores (Rs. 75 crores + Rs. 5 crores) as shown in Table 3.

**TABLE 3 : GROSS DOMESTIC PRODUCT  
(Rs Crores)**

1. Wages and salaries	45
2. Income from rent	3
3. Net interest	4
4. Profits of companies	8
Net Value Added or NDP	<u>60</u>
5. Indirect taxes	+7
6. Depreciation	+8
Gross Value Added or GDP	<u>75</u>
7. Net income from abroad	+5
 Gross National Income	 80

#### It's Importance:

The value added method for measuring national income is more realistic than the product and income methods because it avoids the problem of double counting by excluding the value of intermediate products. Thus this method establishes the importance of intermediate products in the national economy. Second, by studying the national income accounts relating to value added, the contribution of each production sector to the value of the GNP can be found out.

For instance, it can tell us whether agriculture is contributing more or the share of manufacturing is falling, or of the tertiary sector is increasing in the current year as compared to some previous years. Third, this method is highly useful because "it provides a means of checking the GNP estimates obtained by summing the various types of commodity purchases."

#### It's Difficulties:

However, difficulties arise in the calculation of value added in the case of certain public services like police, military, health, education, etc. which cannot be estimated accurately in money terms. Similarly, it is difficult to estimate the contribution made to value added by profits earned on irrigation and power projects.

#### (G) GNP at Market Prices:

When we multiply the total output produced in one year by their market prices prevalent during that year in a country, we get the Gross National Product at market prices. Thus GNP at market prices means the gross value of final goods and services produced annually in a country plus net income from abroad. It includes the gross value of output of all items from (1) to (4) mentioned under GNP.  $\text{GNP at Market Prices} = \text{GDP at Market Prices} + \text{Net Income from Abroad}$ .

#### (H) GNP at Factor Cost:

GNP at factor cost is the sum of the money value of the income produced by and accruing to the various factors of production in one year in a country. It includes all items mentioned above under income method to GNP less indirect taxes.

GNP at market prices always includes indirect taxes levied by the government on goods which raise their prices. But GNP at factor cost is the income which the factors of production receive in return for their services alone. It is the cost of production.

Thus GNP at market prices is always higher than GNP at factor cost. Therefore, in order to arrive at GNP at factor cost, we deduct indirect taxes from GNP at market prices. Again, it often happens that the cost of production of a commodity to the producer is higher than a price of a similar commodity in the market.

In order to protect such producers, the government helps them by granting monetary help in the form of a subsidy equal to the difference between the market price and the cost of production of the commodity. As a result, the price of the commodity to the producer is reduced and equals the market price of similar commodity.

For example if the market price of rice is Rs. 3 per kg but it costs the producers in certain areas Rs. 3.50. The government gives a subsidy of 50 paisa per kg to them in order to meet their cost of production. Thus in order to arrive at GNP at factor cost, subsidies are added to GNP at market prices.

$\text{GNP at Factor Cost} = \text{GNP at Market Prices} - \text{Indirect Taxes} + \text{Subsidies}$ .

#### (I) Net National Product (NNP):

NNP includes the value of total output of consumption goods and investment goods. But the process of production uses up a certain amount of fixed capital. Some fixed equipment wears out, its other components are damaged or destroyed, and still others are rendered obsolete through technological changes.

All this process is termed depreciation or capital consumption allowance. In order to arrive at NNP, we deduct depreciation from GNP. The word 'net' refers to the exclusion of that part of total output which represents depreciation. So  $\text{NNP} = \text{GNP} - \text{Depreciation}$ .

#### (J) NNP at Market Prices:

Net National Product at market prices is the net value of final goods and services evaluated at market prices in the course of one year in a country. If we deduct depreciation from GNP at market prices, we get NNP at market prices. So  $\text{NNP at Market Prices} = \text{GNP at Market Prices} - \text{Depreciation}$ .

#### (K) NNP at Factor Cost:

Net National Product at factor cost is the net output evaluated at factor prices. It includes income earned by factors of production through participation in the production process such as wages and salaries, rents, profits, etc. It is also called National Income. This measure differs from NNP at market prices in that indirect taxes are deducted and subsidies are added to NNP at market prices in order to arrive at NNP at factor cost. Thus

$\text{NNP at Factor Cost} = \text{NNP at Market Prices} - \text{Indirect taxes} + \text{Subsidies}$

$= \text{GNP at Market Prices} - \text{Depreciation} - \text{Indirect taxes} + \text{Subsidies}$ .

$= \text{National Income}$ .

Normally, NNP at market prices is higher than NNP at factor cost because indirect taxes exceed government subsidies. However, NNP at market prices can be less than NNP at factor cost when government subsidies exceed indirect taxes.

#### (L) Domestic Income:

Income generated (or earned) by factors of production within the country from its own resources is called domestic income or domestic product.

#### Domestic income includes:

- (i) Wages and salaries, (ii) rents, including imputed house rents, (iii) interest, (iv) dividends, (v) undistributed corporate profits, including surpluses of public undertakings, (vi) mixed incomes consisting of profits of unincorporated firms, self-employed persons, partnerships, etc., and (vii) direct taxes.

Since domestic income does not include income earned from abroad, it can also be shown as: Domestic Income = National Income - Net income earned from abroad. Thus the difference between domestic income and national income is the net income earned from abroad. If we add net income from abroad to domestic income, we get national income, i.e., National Income = Domestic Income + Net income earned from abroad.

But the net national income earned from abroad may be positive or negative. If exports exceed import, net income earned from abroad is positive. In this case, national income is greater than domestic income. On the other hand, when imports exceed exports, net income earned from abroad is negative and domestic income is greater than national income.

**(M) Private Income:**

Private income is income obtained by private individuals from any source, productive or otherwise, and the retained income of corporations. It can be arrived at from NNP at Factor Cost by making certain additions and deductions.

The additions include transfer payments such as pensions, unemployment allowances, sickness and other social security benefits, gifts and remittances from abroad, windfall gains from lotteries or from horse racing, and interest on public debt. The deductions include income from government departments as well as surpluses from public undertakings, and employees' contribution to social security schemes like provident funds, life insurance, etc.

Thus Private Income = National Income (or NNP at Factor Cost) + Transfer Payments + Interest on Public Debt — Social Security — Profits and Surpluses of Public Undertakings.

**(N) Personal Income:**

Personal income is the total income received by the individuals of a country from all sources before payment of direct taxes in one year. Personal income is never equal to the national income, because the former includes the transfer payments whereas they are not included in national income.

Personal income is derived from national income by deducting undistributed corporate profits, profit taxes, and employees' contributions to social security schemes. These three components are excluded from national income because they do not reach individuals.

But business and government transfer payments, and transfer payments from abroad in the form of gifts and remittances, windfall gains, and interest on public debt which are a source of income for individuals are added to national income. Thus Personal Income = National Income – Undistributed Corporate Profits – Profit Taxes – Social Security Contribution + Transfer Payments + Interest on Public Debt.

Personal income differs from private income in that it is less than the latter because it excludes undistributed corporate profits.

Thus Personal Income = Private Income – Undistributed Corporate Profits – Profit Taxes.

**(O) Disposable Income:**

Disposable income or personal disposable income means the actual income which can be spent on consumption by individuals and families. The whole of the personal income cannot be spent on consumption, because it is the income that accrues before direct taxes have actually been paid. Therefore, in order to obtain disposable income, direct taxes are deducted from personal income. Thus Disposable Income=Personal Income – Direct Taxes.

But the whole of disposable income is not spent on consumption and a part of it is saved. Therefore, disposable income is divided into consumption expenditure and savings. Thus Disposable Income = Consumption Expenditure + Savings.

If disposable income is to be deduced from national income, we deduct indirect taxes plus subsidies, direct taxes on personal and on business, social security payments, undistributed corporate profits or business savings from it and add transfer payments and net income from abroad to it.

Thus Disposable Income = National Income – Business Savings – Indirect Taxes + Subsidies – Direct Taxes on Persons – Direct Taxes on Business – Social Security Payments + Transfer Payments + Net Income from abroad.

**(P) Real Income:**

Real income is national income expressed in terms of a general level of prices of a particular year taken as base. National income is the value of goods and services produced as expressed in terms of money at current prices. But it does not indicate the real state of the economy.

It is possible that the net national product of goods and services this year might have been less than that of the last year, but owing to an increase in prices, NNP might be higher this year. On the contrary, it is also possible that NNP might have increased but the price level might have fallen, as a result national income would appear to be less than that of the last year. In both the situations, the national income does not depict the real state of the country. To rectify such a mistake, the concept of real income has been evolved.

In order to find out the real income of a country, a particular year is taken as the base year when the general price level is neither too high nor too low and the price level for that year is assumed to be 100. Now the general level of prices of the given year for which the national income (real) is to be determined is assessed in accordance with the prices of the base year. For this purpose the following formula is employed.

$\text{Real NNP} = \text{NNP for the Current Year} \times \text{Base Year Index} (=100) / \text{Current Year Index}$

Suppose 1990-91 is the base year and the national income for 1999-2000 is Rs. 20,000 crores and the index number for this year is 250. Hence, Real National Income for 1999-2000 will be  $= 20000 \times 100/250 = \text{Rs. 8000 crores}$ . This is also known as national income at constant prices.

#### (Q) Per Capita Income:

The average income of the people of a country in a particular year is called Per Capita Income for that year. This concept also refers to the measurement of income at current prices and at constant prices. For instance, in order to find out the per capita income for 2001, at current prices, the national income of a country is divided by the population of the country in that year.

$$\text{Per Capita Income for 2001} = \frac{\text{National income for 2001}}{\text{Population in 2001}}$$

Similarly, for the purpose of arriving at the Real Per Capita Income, this very formula is used.

$$\text{Real Per Capita Income for 2001} = \frac{\text{Real national income for 2001}}{\text{Population in 2001}}$$

This concept enables us to know the average income and the standard of living of the people. But it is not very reliable, because in every country due to unequal distribution of national income, a major portion of it goes to the richer sections of the society and thus income received by the common man is lower than the per capita income.

#### 3. Methods of Measuring National Income:

There are four methods of measuring national income. Which method is to be used depends on the availability of data in a country and the purpose in hand.

##### (1) Product Method:

According to this method, the total value of final goods and services produced in a country during a year is calculated at market prices. To find out the GNP, the data of all productive activities, such as agricultural products, wood received from forests, minerals received from mines, commodities produced by industries, the contributions to production made by transport, communications, insurance companies, lawyers, doctors, teachers, etc. are collected and assessed at market prices. Only the final goods and services are included and the intermediary goods and services are left out.

##### (2) Income Method:

According to this method, the net income payments received by all citizens of a country in a particular year are added up, i.e., net incomes that accrue to all factors of production by way of net rents, net wages, net interest and net profits are all added together but incomes received in the form of transfer payments are not included in it. The data pertaining to income are obtained from different sources, for instance, from income tax department in respect of high income groups and in case of workers from their wage bills.

##### (3) Expenditure Method:

According to this method, the total expenditure incurred by the society in a particular year is added together and includes personal consumption expenditure, net domestic investment, government expenditure on goods and services, and net foreign investment. This concept is based on the assumption that national income equals national expenditure.

#### **(4) Value Added Method:**

Another method of measuring national income is the value added by industries. The difference between the value of material outputs and inputs at each stage of production is the value added. If all such differences are added up for all industries in the economy, we arrive at the gross domestic product.

#### **4. Difficulties or Limitations in Measuring National Income:**

There are many conceptual and statistical problems involved in measuring national income by the income method, product method, and expenditure method.

We discuss them separately in the light of the three methods:

##### **(A) Problems in Income Method:**

The following problems arise in the computation of National Income by income method:

###### **1. Owner-occupied Houses:**

A person who rents a house to another earns rental income, but if he occupies the house himself, will the services of the house-owner be included in national income. The services of the owner-occupied house are included in national income as if the owner sells to himself as a tenant its services.

For the purpose of national income accounts, the amount of imputed rent is estimated as the sum for which the owner-occupied house could have been rented. The imputed net rent is calculated as that portion of the amount that would have accrued to the house-owner after deducting all expenses.

###### **2. Self-employed Persons:**

Another problem arises with regard to the income of self-employed persons. In their case, it is very difficult to find out the different inputs provided by the owner himself. He might be contributing his capital, land, labour and his abilities in the business. But it is not possible to estimate the value of each factor input to production. So he gets a mixed income consisting of interest, rent, wage and profits for his factor services. This is included in national income.

###### **3. Goods meant for Self-consumption:**

In under-developed countries like India, farmers keep a large portion of food and other goods produced on the farm for self-consumption. The problem is whether that part of the produce which is not sold in the market can be included in national income or not. If the farmer were to sell his entire produce in the market, he will have to buy what he needs for self-consumption out of his money income. If, instead he keeps some produce for his self-consumption, it has money value which must be included in national income.

###### **4. Wages and Salaries paid in Kind:**

Another problem arises with regard to wages and salaries paid in kind to the employees in the form of free food, lodging, dress and other amenities. Payments in kind by employers are included in national income. This is because the employees would have received money income equal to the value of free food, lodging, etc. from the employer and spent the same in paying for food, lodging, etc.

##### **(B) PROBLEMS IN PRODUCT METHOD:**

**The following problems arise in the computation of national income by product method:**

###### **1. Services of Housewives:**

The estimation of the unpaid services of the housewife in the national income presents a serious difficulty. A housewife renders a number of useful services like preparation of meals, serving, tailoring, mending, washing, cleaning, bringing up children, etc.

She is not paid for them and her services are not included in national income. Such services performed by paid servants are included in national income. The national income is, therefore, underestimated by excluding the services of a housewife.

The reason for the exclusion of her services from national income is that the love and affection of a housewife in performing her domestic work cannot be measured in monetary terms. That is why when the owner of a firm marries his lady secretary, her services are not included in national income when she stops working as a secretary and becomes a housewife.

When a teacher teaches his own children, his work is also not included in national income. Similarly, there are a number of goods and services which are difficult to be assessed in money terms for the reason stated above, such as painting, singing, dancing, etc. as hobbies.

## **2. Intermediate and Final Goods:**

The greatest difficulty in estimating national income by product method is the failure to distinguish properly between intermediate and final goods. There is always the possibility of including a good or service more than once, whereas only final goods are included in national income estimates. This leads to the problem of double counting which leads to the overestimation of national income.

## **3. Second-hand Goods and Assets:**

Another problem arises with regard to the sale and purchase of second-hand goods and assets. We find that old scooters, cars, houses, machinery, etc. are transacted daily in the country. But they are not included in national income because they were counted in the national product in the year they were manufactured.

If they are included every time they are bought and sold, national income would increase many times. Similarly, the sale and purchase of old stocks, shares, and bonds of companies are not included in national income because they were included in national income when the companies were started for the first time. Now they are simply financial transactions and represent claims.

But the commission or fees charged by the brokers in the repurchase and resale of old shares, bonds, houses, cars or scooters, etc. are included in national income. For these are the payments they receive for their productive services during the year.

## **4. Illegal Activities:**

Income earned through illegal activities like gambling, smuggling, illicit extraction of wine, etc. is not included in national income. Such activities have value and satisfy the wants of the people but they are not considered productive from the point of view of society. But in countries like Nepal and Monaco where gambling is legalised, it is included in national income. Similarly, horse-racing is a legal activity in England and is included in national income.

## **5. Consumers' Service:**

There are a number of persons in society who render services to consumers but they do not produce anything tangible. They are the actors, dancers, doctors, singers, teachers, musicians, lawyers, barbers, etc. The problem arises about the inclusion of their services in national income since they do not produce tangible commodities. But as they satisfy human wants and receive payments for their services, their services are included as final goods in estimating national income.

## **6. Capital Gains:**

The problem also arises with regard to capital gains. Capital gains arise when a capital asset such as a house, some other property, stocks or shares, etc. is sold at higher price than was paid for it at the time of purchase. Capital

gains are excluded from national income because these do not arise from current economic activities. Similarly, capital losses are not taken into account while estimating national income.

#### **7. Inventory Changes:**

All inventory changes (or changes in stocks) whether positive or negative are included in national income. The procedure is to take changes in physical units of inventories for the year valued at average current prices paid for them.

The value of changes in inventories may be positive or negative which is added or subtracted from the current production of the firm. Remember, it is the change in inventories and not total inventories for the year that are taken into account in national income estimates.

#### **8. Depreciation:**

Depreciation is deducted from GNP in order to arrive at NNP. Thus depreciation lowers the national income. But the problem is of estimating the current depreciated value of, say, a machine, whose expected life is supposed to be thirty years. Firms calculate the depreciation value on the original cost of machines for their expected life. This does not solve the problem because the prices of machines change almost every year.

#### **9. Price Changes:**

National income by product method is measured by the value of final goods and services at current market prices. But prices do not remain stable. They rise or fall. When the price level rises, the national income also rises, though the national production might have fallen.

On the contrary, with the fall in the price level, the national income also falls, though the national production might have increased. So price changes do not adequately measure national income. To solve this problem, economists calculate the real national income at a constant price level by the consumer price index.

#### **(C) Problems in Expenditure Method:**

The following problems arise in the calculation of national income by expenditure method:

##### **(1) Government Services:**

In calculating national income by expenditure method, the problem of estimating government services arises. Government provides a number of services, such as police and military services, administrative and legal services. Should expenditure on government services be included in national income?

If they are final goods, then only they would be included in national income. On the other hand, if they are used as intermediate goods, meant for further production, they would not be included in national income. There are many divergent views on this issue.

One view is that if police, military, legal and administrative services protect the lives, property and liberty of the people, they are treated as final goods and hence form part of national income. If they help in the smooth functioning of the production process by maintaining peace and security, then they are like intermediate goods that do not enter into national income.

In reality, it is not possible to make a clear demarcation as to which service protects the people and which protects the productive process. Therefore, all such services are regarded as final goods and are included in national income.

##### **(2) Transfer Payments:**

There arises the problem of including transfer payments in national income. Government makes payments in the form of pensions, unemployment allowance, subsidies, interest on national debt, etc. These are government expenditures but they are not included in national income because they are paid without adding anything to the production process during the current year.

For instance, pensions and unemployment allowances are paid to individuals by the government without doing any productive work during the year. Subsidies tend to lower the market price of the commodities. Interest on national or public debt is also considered a transfer payment because it is paid by the government to individuals and firms on their past savings without any productive work.

### **(3) Durable-use Consumers' Goods:**

Durable-use consumers' goods also pose a problem. Such durable-use consumers' goods as scooters, cars, fans, TVs, furniture's, etc. are bought in one year but they are used for a number of years. Should they be included under investment expenditure or consumption expenditure in national income estimates? The expenditure on them is regarded as final consumption expenditure because it is not possible to measure their used up value for the subsequent years.

But there is one exception. The expenditure on a new house is regarded as investment expenditure and not consumption expenditure. This is because the rental income or the imputed rent which the house-owner gets is for making investment on the new house. However, expenditure on a car by a household is consumption expenditure. But if he spends the amount for using it as a taxi, it is investment expenditure.

### **(4) Public Expenditure:**

Government spends on police, military, administrative and legal services, parks, street lighting, irrigation, museums, education, public health, roads, canals, buildings, etc. The problem is to find out which expenditure is consumption expenditure and which investment expenditure is.

Expenses on education, museums, public health, police, parks, street lighting, civil and judicial administration are consumption expenditure. Expenses on roads, canals, buildings, etc. are investment expenditure. But expenses on defence equipment are treated as consumption expenditure because they are consumed during a war as they are destroyed or become obsolete. However, all such expenses including the salaries of armed personnel are included in national income.

## **5. Importance of National Income Analysis:**

**The national income data have the following importance:**

### **1. For the Economy:**

National income data are of great importance for the economy of a country. These days the national income data are regarded as accounts of the economy, which are known as social accounts. These refer to net national income and net national expenditure, which ultimately equal each other.

Social accounts tell us how the aggregates of a nation's income, output and product result from the income of different individuals, products of industries and transactions of international trade. Their main constituents are inter-related and each particular account can be used to verify the correctness of any other account.

### **2. National Policies:**

National income data form the basis of national policies such as employment policy, because these figures enable us to know the direction in which the industrial output, investment and savings, etc. change, and proper measures can be adopted to bring the economy to the right path.

### **3. Economic Planning:**

In the present age of planning, the national data are of great importance. For economic planning, it is essential that the data pertaining to a country's gross income, output, saving and consumption from different sources should be available. Without these, planning is not possible.

### **4. Economic Models:**

The economists propound short-run as well as long-run economic models or long-run investment models in which the national income data are very widely used.

**5. Research:**

The national income data are also made use of by the research scholars of economics. They make use of the various data of the country's input, output, income, saving, consumption, investment, employment, etc., which are obtained from social accounts.

**6. Per Capita Income:**

National income data are significant for a country's per capita income which reflects the economic welfare of the country. The higher the per capita income, the higher the economic welfare of the country.

**7. Distribution of Income:**

National income statistics enable us to know about the distribution of income in the country. From the data pertaining to wages, rent, interest and profits, we learn of the disparities in the incomes of different sections of the society. Similarly, the regional distribution of income is revealed.

It is only on the basis of these that the government can adopt measures to remove the inequalities in income distribution and to restore regional equilibrium. With a view to removing these personal and regional disequilibria, the decisions to levy more taxes and increase public expenditure also rest on national income statistics.

**6. Inter-Relationship among different concept of National Income**

The inter-relationship among the various concept of national income can be shown in the form of equations as under:

1. Gross National Product (GNP)
- = Gross National Expenditure (GNE)
2. Gross Domestic Product (GDP)
- = GNP – Net Income from abroad.
3. GNP at Market Prices
- = GNP at Factor Cost + Indirect Taxes – Subsidies
4. NNP at Market Prices
- = GNP at Market Prices – Depreciation or Capital Consumption Allowance
5. Net Domestic Product (NDP) at Market Prices
- = NNP at Market Prices – Net Factor Income from abroad
6. NNP at Factor Cost or National Income or National Product
- = NNP at Market Prices – Indirect Taxes + Subsidies
7. NDP at Factor Cost or Domestic Income or Domestic Product
- = National Income – Net Factor Income from abroad
8. Private Income
- = NNP at Factor Cost + Government and Business Transfer Payments + Current Transfers from abroad in the form of Gifts and Remittances + Windfall Gains + Net Factor Income from abroad + Interest on Public Debt and Consumer Interest – Social Security Contribution – Income from Government Departments and property – Profits and Surpluses of Public Corporations (or Undertakings)  
Or
- = Income from Domestic Product accruing to Private Sector + Interest on Public Dept + Net Factor Income from abroad + Transfer Payments + Current Transfers from the rest of the world (or abroad)
9. Income from Domestic Product accruing to Private Sector
- = NDP at Factor Cost – Income from
10. Personal Income
- = Domestic Product accruing to Government Departments – Saving of Non-Departmental Enterprises.
11. Personal Disposable Income or Disposable Income
- = Private Income – Saving of Private Corporate Sector (or Undistributed Corporate Profits) – Corporation Tax (or Profit Taxes)
- = Personal Income – Direct Taxes paid by Households (or Direct Personal Taxes) and Miscellaneous Fees, Fines, etc.  
Or
- = NDP at Factor Cost + Transfer Payments + Net Factor Income from abroad – Corporation Tax – Undistributed Corporate Profits – Social Security Payments – Direct Personal Taxes  
Or
- = National Income at Factor Cost + Transfer Payments + Net Income from abroad – Corporate Tax – undistributed Corporate Profits – Social Security payments – Direct Personal Taxes – Indirect Taxes + Subsidies.

### Meaning of Money Supply

The supply of money means the total stock of money (paper notes, coins and demand deposits of bank) in circulation which is held by the public at any particular point of time.

Briefly money supply is the stock of money in circulation on a specific day. Thus two components of money supply are

- (i) currency (Paper notes and coins)
- (ii) Demand deposits of commercial banks.

Again it needs to be noted that (like difference between stock and supply of a commodity) total stock of money is different from total supply of money.

Supply of money is only that part of total stock of money which is held by the public at a particular point of time. In other words, money held by its users (and not producers) in spendable form at a point of time is termed as money supply.

The stock of money held by government and the banking system are not included because they are suppliers or producers of money and cash balances held by them are not in actual circulation. In short, money supply includes currency held by public and net demand deposits in banks.

#### **Sources of Money Supply:**

- (i) Government (which issues one-rupee notes and all other coins)
- (ii) RBI (which issues paper currency)
- (iii) commercial banks (which create credit on the basis of demand deposits).

#### **(b) Alternative measures of Money Supply (money stock):**

In India Reserve Bank of India uses four alternative measures of money supply called M1, M2, M3 and M4. Among these measures M1 is the most commonly used measure of money supply because its components are regarded most liquid assets. Each measure is briefly explained below.

(i)  $M1 = C + DD + OD$ . Here C denotes currency (paper notes and coins) held by public, DD stands for demand deposits in banks and OD stands for other deposits in RBI. Demand deposits are deposits which can be withdrawn at any time by the account holders. Current account deposits are included in demand deposits.

But savings account deposits are not included in DD because certain conditions are imposed on the amount of withdrawals and number of withdrawals. OD stands for other deposits with the RBI which includes demand deposits of public financial institutions, demand deposits of foreign central banks and international financial institutions like IMF, World Bank, etc.

- (ii)  $M2 = M1$  (detailed above) + saving deposits with Post Office Saving Banks
- (ii)  $M3 = M1 +$  Net Time-deposits of Banks
- (iii)  $M4 = M3 +$  Total deposits with Post Office Saving Organisation (excluding NSC)

In fact, a great deal of debate is still going on as to what constitutes money supply. Savings deposits of post offices are not a part of money supply because they do not serve as medium of exchange due to lack of cheque facility. Similarly, fixed deposits in commercial banks are not counted as money. Therefore, M1 and M2 may be treated as measures of narrow money whereas M3 and M4 as measures of broad money.

In practice, M1 is widely used as measure of money supply which is also called aggregate monetary resources of the society. All the above four measures represent different degrees of liquidity, with M4 being the most liquid and M1 being the least liquid. It may be noted that liquidity means ability to convert an asset into money quickly and without loss of value.

#### **Role of Agriculture in the Economic Development of a Country**

Some of the major role of agriculture in economic development of a country are as follows:

Agricultural sector plays a strategic role in the process of economic development of a country.

It has already made a significant contribution to the economic prosperity of advanced countries and its role in the economic development of less developed countries is of vital importance.

In other words, where per capita real income is low, emphasis is being laid on agriculture and other primary industries.

"Increase in agricultural production and the rise in the per-capita income of the rural community, together with the industrialisation and urbanisation, lead to an increased demand in industrial production" -Dr. Bright Singh.

The history of England is clear evidence that Agricultural Revolution preceded the Industrial Revolution there. In U.S.A. and Japan, also agricultural development has helped to a greater extent in the process of their

industrialisation. Similarly, various under-developed countries of the world engaged in the process of economic development have by now learnt the limitations of putting over-emphasis on industrialisation as a means to attain higher per capita real income. "Thus industrial and agricultural developments are not alternatives but are complementary and are mutually supporting with respect to both inputs and outputs."

It is seen that increased agricultural output and productivity tend to contribute substantially to an overall economic development of the country, it will be rational and appropriate to place greater emphasis on further development of the agricultural sector.

According to Prof. Kinderberger, Todaro, Lewis and Nurkse etc., agriculture makes its contribution to economic development in several ways, viz.:

- (1) By providing food and raw material to non-agricultural sectors of the economy,
- (2) By creating demand for goods produced in non-agricultural sectors, by the rural people on the strength of the purchasing power, earned by them on selling the marketable surplus,
- (3) By providing investable surplus in the form of savings and taxes to be invested in non-agricultural sector,
- (4) By earning valuable foreign exchange through the export of agricultural products,
- (5) Providing employment to a vast army of uneducated, backward and unskilled labour. As a matter of fact, if the process of economic development is to be initiated and made self-sustaining, it must begin for agricultural sector.

#### **Role of Agriculture in Economic Development:**

The agriculture sector is the backbone of an economy which provides the basic ingredients to mankind and now raw material for industrialisation.

Therefore, the role of agriculture for the development of an economy may be stated as below:

##### **1. Contribution to National Income:**

The lessons drawn from the economic history of many advanced countries tell us that agricultural prosperity contributed considerably in fostering economic advancement. It is correctly observed that, "The leading industrialized countries of today were once predominantly agricultural while the developing economies still have the dominance of agriculture and it largely contributes to the national income. In India, still 28% of national income comes from this sector.

##### **2. Source of Food Supply:**

Agriculture is the basic source of food supply of all the countries of the world—whether underdeveloped, developing or even developed. Due to heavy pressure of population in underdeveloped and developing countries and its rapid increase, the demand for food is increasing at a fast rate. If agriculture fails to meet the rising demand of food products, it is found to affect adversely the growth rate of the economy. Raising supply of food by agricultural sector has, therefore, great importance for economic growth of a country.

Increase in demand for food in an economy is determined by the following equation:

$$D = P + 2g$$

Here,

D stands for Annual Rate of Growth in demand for food.

P stands for Population Growth Rate.

g stands for Rate of Increase in per Capita Income.

2 stand for Income Elasticity of Demand for Agricultural Products.

**3. Pre-Requisite for Raw Material:**

Agricultural advancement is necessary for improving the supply of raw materials for the agro-based industries especially in developing countries. The shortage of agricultural goods has its impact upon on industrial production and a consequent increase in the general price level. It will impede the growth of the country's economy. The flour mills, rice shellers, oil & dal mills, bread, meat, milk products sugar factories, wineries, jute mills, textile mills and numerous other industries are based on agricultural products.

**4. Provision of Surplus:**

The progress in agricultural sector provides surplus for increasing the exports of agricultural products. In the earlier stages of development, an increase in the exports earning is more desirable because of the greater strains on the foreign exchange situation needed for the financing of imports of basic and essential capital goods.

Johnson and Mellor are of the opinion, "In view of the urgent need for enlarged foreign exchange earnings and the lack of alternative opportunities, substantial expansion of agricultural export production is frequently a rational policy even though the world supply—demand situation for a commodity is unfavorable."

**5. Shift of Manpower:**

Initially, agriculture absorbs a large quantity of labour force. In India still about 62% labour is absorbed in this sector. Agricultural progress permits the shift of manpower from agricultural to non-agricultural sector. In the initial stages, the diversion of labour from agricultural to non-agricultural sector is more important from the point of view of economic development as it eases the burden of surplus labour force over the limited land. Thus, the release of surplus manpower from the agricultural sector is necessary for the progress of agricultural sector and for expanding the non-agricultural sector.

**6. Creation of Infrastructure:**

The development of agriculture requires roads, market yards, storage, transportation railways, postal services and many others for an infrastructure creating demand for industrial products and the development of commercial sector.

**7. Relief from Shortage of Capital:**

The development of agricultural sector has minimized the burden of several developed countries who were facing the shortage of foreign capital. If foreign capital is available with the 'strings' attached to it, it will create another significant problem. Agriculture sector requires less capital for its development thus it minimizes growth problem of foreign capital.

**8. Helpful to Reduce Inequality:**

In a country which is predominantly agricultural and overpopulated, there is greater inequality of income between the rural and urban areas of the country. To reduce this inequality of income, it is necessary to accord higher priority to agriculture. The prosperity of agriculture would raise the income of the majority of the rural population and thus the disparity in income may be reduced to a certain extent.

**9. Based on Democratic Notions:**

If the agricultural sector does not grow at a faster rate, it may result in the growing discontentment amongst the masses which is never healthy for the smooth running of democratic governments. For economic development, it is necessary to minimize political as well as social tensions. In case the majority of the people have to be kindled with the hopes of prosperity, this can be attained with the help of agricultural progress. Thus development of agriculture sector is also relevant on political and social grounds.

**10. Create Effective Demand:**

The development of agricultural sector would tend to increase the purchasing power of agriculturists which will help the growth of the non-agricultural sector of the country. It will provide a market for increased production. In

underdeveloped countries, it is well known that the majority of people depend upon agriculture and it is they who must be able to afford to consume the goods produced.

Therefore, it will be helpful in stimulating the growth of the non-agricultural sector. Similarly improvement in the productivity of cash crops may pave the way for the promotion of exchange economy which may help the growth of non-agricultural sector. Purchase of industrial products such as pesticides, farm machinery etc. also provide boost to industrial dead out.

#### **11. Helpful in Phasing out Economic Depression:**

During depression, industrial production can be stopped or reduced but agricultural production continues as it produces basic necessities of life. Thus it continues to create effective demand even during adverse conditions of the economy.

#### **12. Source of Foreign Exchange for the Country:**

Most of the developing countries of the world are exporters of primary products. These products contribute 60 to 70 per cent of their total export earning. Thus, the capacity to import capital goods and machinery for industrial development depends crucially on the export earning of the agriculture sector. If exports of agricultural goods fail to increase at a sufficiently high rate, these countries are forced to incur heavy deficit in the balance of payments resulting in a serious foreign exchange problem.

However, primary goods face declining prices in international market and the prospects of increasing export earnings through them are limited. Due to this, large developing countries like India (having potentialities of industrial development) are trying to diversify their production structure and promote the exports of manufactured goods even though this requires the adoption of protective measures in the initial period of planning.

#### **13. Contribution to Capital Formation:**

Underdeveloped and developing countries need huge amount of capital for its economic development. In the initial stages of economic development, it is agriculture that constitutes a significant source of capital formation.

##### **Agriculture sector provides funds for capital formation in many ways as:**

- (i) agricultural taxation,
- (ii) export of agricultural products,
- (iii) collection of agricultural products at low prices by the government and selling it at higher prices. This method is adopted by Russia and China,
- (iv) labour in disguised unemployment, largely confined to agriculture, is viewed as a source of investible surplus,
- (v) transfer of labour and capital from farm to non-farm activities etc.

#### **14. Employment Opportunities for Rural People:**

Agriculture provides employment opportunities for rural people on a large scale in underdeveloped and developing countries. It is an important source of livelihood. Generally, landless workers and marginal farmers are engaged in non-agricultural jobs like handicrafts, furniture, textiles, leather, metal work, processing industries, and in other service sectors. These rural units fulfill merely local demands. In India about 70.6% of total labour force depends upon agriculture.

#### **15. Improving Rural Welfare:**

It is time that rural economy depends on agriculture and allied occupations in an underdeveloped country. The rising agricultural surplus caused by increasing agricultural production and productivity tends to improve social welfare, particularly in rural areas. The living standard of rural masses rises and they start consuming nutritious

diet including eggs, milk, ghee and fruits. They lead a comfortable life having all modern amenities—a better house, motor-cycle, radio, television and use of better clothes.

#### **16. Extension of Market for Industrial Output:**

As a result of agricultural progress, there will be extension of market for industrial products. Increase in agricultural productivity leads to increase in the income of rural population which in turn leads to more demand for industrial products, thus development of industrial sector.

According to Dr. Bright Singh, "Increase in agricultural production and the rise in the per-capita income of the rural community, together with the industrialisation and urbanisation, lead to an increased demand in industrial production." In this way, agricultural sector helps promote economic growth by securing as a supplement to industrial sector.

#### **Conclusion:**

From the above cited explanation we conclude that agricultural development is a must for the economic development of a country. Even developed countries lay emphasis on agricultural development. According to Muir, "Agricultural progress is essential to provide food for growing non-agricultural labour force, raw materials for industrial production and saving and tax revenue to support development of the rest of the economy, to earn foreign exchange and to provide a growing market for domestic manufactures."

#### **Agricultural Policy of India**

Agricultural policy of a country is mostly designed by the Government for raising agricultural production and productivity and also for raising the level of income and standard of living of farmers within a definite time frame. This policy is formulated for all round and comprehensive development of the agricultural sector.

In India, the main objectives of agricultural policy are to remove the major problems of agricultural sector related to improper and inefficient uses of natural resources, predominance of low-value agriculture, poor cost-benefit ratio of the sectoral activities and insignificant progress of co-operative farming and other self-help institutions.

#### **Main Objectives:**

The following are some of the important objectives of India's agricultural policy:

##### **(i) Raising the Productivity of Inputs:**

One of the important objectives of India's agricultural policy is to improve the productivity of inputs so purchased viz., HYV seeds, fertilizers, pesticides, irrigation projects etc.

##### **(ii) Raising Value-Added per Hectare:**

Another important objective of country's agricultural policy is to increase per hectare value-added rather than raising physical output by raising the productivity of agriculture in general and productivity of small and marginal holdings in particular.

##### **(iii) Protecting the Interest of Poor Farmers:**

One of the important objectives of agricultural policy is to protect the interest of poor and marginal farmers by abolishing intermediaries through land reforms expanding institutional credit support to poor farmers etc.

##### **(iv) Modernizing Agricultural Sector:**

Modernizing agricultural sector is another important objective of agricultural policy of the country. Here the policy support includes introduction of modern technology in agricultural operations and application of improved agricultural inputs like HYV seeds, fertilizers etc.

##### **(v) Checking Environmental Degradation:**

Agricultural policy of India has set another objective to check environmental degradation of natural base of Indian agriculture.

**(vi) Agricultural Research and Training:**

Another important objective of Indian agricultural policy is to promote agricultural research and training facilities and to percolate the fruits of such research among the farmers by establishing a close linkage between research institutions and farmers.

**(vii) Removing Bureaucratic Obstacles:**

The policy has set another objective to remove bureaucratic obstacles on the farmers Co-operative societies and self help institutions so that they can work independently.

**National Agricultural Policy Document, 2000:**

On 28th July, 2000, the NDA Government made public a National Agriculture Policy envisaging over 4 per cent annual growth through efficient use of resources and technology and increased private investment while emphasizing on price protection to farmers in the WTO regime.

The policy aimed at catapulting agricultural growth to over 4 per cent per annum by 2005. This growth is to be achieved through a combination of measures including structural, institutional, agronomic, environmental, economical and tax reforms.

The policy formulation has been necessitated due to the relatively poor growth of agriculture experienced during the 1990s. The Policy Document observed, "Capital inadequacy, lack of infrastructural support and demand side constraints such as controls on movement, storage and sale of agricultural products etc. have continued to affect the economic activity of agricultural sector. Consequently, growth has also tended to slacken during the 1990s".

As the agricultural sector ensures the food security and nutrition to this huge size of population of India and also supplies huge quantity of raw materials for expanding industrial base along with creating surplus for exports thus a fast and equitable reward system for the farming community along with attaining faster growth rate of the sector should be the important components of agricultural reforms.

**Thus, the National Agricultural Policy (2000) has taken the following important objectives:**

1. Attaining a growth rate above 4.0 per cent per annum in the agricultural sector;
2. Attaining a growth which is based on efficient use of resources and also makes provision for conservation of our soil, water and bio-diversity;
3. Attainment of growth with equity, i.e., attaining a growth whose impact would be widespread across regions and different classes of farmers;
4. Attaining a growth that is demand-driven and cater to the need of domestic markets and ensuring maximization of benefit from exports of agricultural products in the face of challenges from economic liberalization and globalization;
5. Attaining a growth that is sustainable technologically, environmentally and economically.

**Sustainability in Agriculture:**

The new policy seeks to introduce economically viable, technically sound, environmentally non-degrading and non-hazardous and socially acceptable use of natural resources of the country for promoting the concept of sustainable agriculture.

**In order to fulfill this strategy, the following measures are suggested in the new policy:**

1. To use unutilized barren wastelands for agriculture and afforestation.

2. To contain biotic pressures on land and to control indiscriminate division of agricultural lands for non-agricultural uses.
3. To enhance cropping intensity through multi-cropping and inter-cropping.
4. To emphasize rational use of ground and surface water so that over-exploitation of ground water resources can be checked. To adopt better technologies such as drip and sprinkler irrigation system so as to arrange more economic and efficient use of water.
5. To adopt vigorously a long-term perspective plan for sustainable rain-fed agriculture by adopting watershed approach and water harvesting method for development of two-thirds of cropped area of the country which is dependent on rainfall.
6. Involvement of farmers and landless labourers will be sought in the development of pastures/ forestry programmes on huge public wasteland by providing adequate financial incentives and entitlement of trees and pastures.

#### **Food and Nutritional Security:**

In order to meet the growing pressure of population growth and to provide food and nutritional security to such a large population, special efforts will be made for raising the productivity and production of crops and thereby to meet the requirement of raw materials of expanding agro-based industries. Special stress will be made for the development of new crop varieties, especially food crops, with higher nutritional value.

The policy has paid due emphasis for the development of rain-fed irrigation, horticulture, floriculture, roots and tubers plantation crops, aromatic and medicinal plants, bee-keeping and sericulture for augmenting food supply and boosting exports along with generation of employment in rural areas.

High priority has also been given on the development of animal husbandry, dairy, poultry and aquaculture so as to diversify agriculture, increasing animal protein availability in food basket and also for generating exportable surpluses.

The policy also encouraged the cultivation of fodder crops and fodder trees so as to meet the growing need for feed and fodder requirements. The policy has encouraged the involvement of co-operatives and the private sector for the promotion and development of animal husbandry, dairy and poultry farming.

#### **Development and Transfer of Technology:**

The policy suggested that the Government should encourage application of biotechnology, remote sensing technologies, energy saving technologies, pre- and post-harvest technologies, and technology for environmental protection. Moreover, the Government will make a fresh attempt to move towards a regime financial sustainability of extension services in a pleased manner. The Government will also undertake special measures for empowering women and also to build their capabilities for improving their access to inputs, technology process and other farming resources.

#### **Incentives and Investment in Agriculture:**

The policy suggested that the Government should make adequate efforts for improving the terms of trade for agriculture along with associated manufacturing sector. Accordingly, attempts will be made to review and rationalize the structure of taxes on food grains, other commercial crops and also excise duty on farm machinery and implements. The Government has committed to keep agriculture outside purview of taxes and decided to continue the present regime of agricultural subsidies.

The new policy statement accepted the problem of fall in public sector investment in agricultural sector and decided to step up public investment for narrowing regional imbalances and also for accelerating development of supportive infrastructure.

In addition to this, private sector investment in agriculture will be encouraged in some sophisticated areas like agricultural research, post-harvest management, marketing and human resource development. Moreover,

attempts would be made for setting up agro-processing units in collaboration between the producer co-operatives and the corporate sector.

#### **Policy on Institutional Structure:**

The policy gave due emphasis for reforming the Institutional structure where the approach on rural development and land reforms will give stress on the following issues:

1. Consolidation of holdings throughout the country following the pattern of north western states.
2. Steps for redistribution of ceiling surplus lands and waste-lands among the landless farmers and unemployed persons.
3. Adopting tenancy reforms for recognizing the rights of tenants and sharecroppers.
4. Promotion and development of lease markets for raising the size of holdings by making legal provisions so as to give private land on lease for cultivation and agro-business purposes.
5. Recognizing the rights of women on land.
6. Making provision for updating and improvement of land records through computerization and also by issuing land pass books to all the farmers.

The policy has made arrangement for promotion through contract farming and land leasing arrangements for allowing accelerated technology transfer, capital inflow and assured marketing arrangements for some crops, especially of oilseeds, cotton and horticultural crops.

#### **Risk Management:**

The **National Agricultural Policy (2000)** gave due importance for the promotion of National Agriculture Insurance Scheme (NAIS) so as to cover all crops and all farmers over the country by giving package insurance policy ensuring protection from all risks in pre- and post-harvest operations, including marketing fluctuations in agricultural prices.

Privatization of agriculture and price protection to farmers in the post-quantitative restriction (QR) regime would be part of the Government's strategy to synergies agricultural growth. The focus of the new policy is on efficient use of resources and technology, adequate availability of credit to farmers and protecting them from seasonal and price fluctuations. Over the next two decades, the policy aims to attain a growth rate in excess of four per cent per annum in the agricultural sector.

The policy document observed that private sector participation would be promoted through contract farming and land leasing arrangement, to allow accelerated technology transfer, capital inflow, assured markets for crop production, especially of oilseeds, cotton and horticultural crops. Moreover, private sector investment in agriculture would be encouraged, particularly in areas like agricultural research, human resource development, post harvest management and marketing.

In view of dismantling of quantitative restrictions (QRs) on imports as per WTO agreement on agriculture, the policy has recommended formulation of commodity wise strategies and arrangements to protect farmers from adverse impact of undue price fluctuations in the world market and promote exports.

The policy also observed that the Government would enlarge coverage of future markets to minimize the wide fluctuations in commodity prices as also for hedging their risks. The policy hoped to achieve sustainable development of agriculture, create gainful employment and raise standards of living.

The policy has also envisaged evolving a "National Livestock Breeding Strategy" to meet the requirement of milk, meat, egg and livestock products and to enhance the role of draught animals as a source of energy for farming operations and transport.

The policy document mentioned that plant varieties would be protected through a legislation to encourage research and breeding of new varieties, particularly in the private sector, in line with India's obligations under the "Trade-related Intellectual Property Rights" (TRIPs) agreement.

The farmers would, however, be allowed to save, use, exchange, share and sell their 'farm saved seeds', except branded seeds of protected varieties for commercial purpose. The policy document observed that the development of animal husbandry, poultry, dairy and aquaculture would receive high priority to diversify agriculture, increasing availability of animal protein in the food basket and for generating exportable surpluses.

A high priority would be accorded to evolve new location specific and economically viable improved varieties of agriculture and horticulture crops, livestock species and aquaculture as also conservation and judicious use of germplasm and other bio-diversity resources. Moreover, the domestic agriculture market would be liberalized.

The policy further mentioned that the restrictions on the movement of agricultural commodities throughout the country would be progressively dismantled. The structure of taxes on food grains and other commercial crops would be reviewed and rationalized.

The excise duty on materials such as farm machinery and implements and fertilizers used as inputs in agricultural tax collection system. Appropriate measures would be adopted to ensure that agriculturists, by and large, remained outside the regulatory and tax collection system.

The policy also observed that in order to protect the interest of farmers in the context of quantitative restrictions, continuous monitoring of international prices would be undertaken and appropriate tariff protection would also be provided.

The policy document further mentioned that rural electrification would be given high priority as a prime mover for agricultural development. The use of new and renewable sources of energy for irrigation and other agricultural purposes would be encouraged.

Finally, the policy document observed that the progressive institutionalization of rural and farm credit would be continued for providing timely and adequate credit to farmers. Moreover, endeavor would also be made to provide a package insurance policy for the farmers, right from sowing of crops to post-harvest operations, including market fluctuations in the prices of agricultural produce.

#### **Appraisal of the New Agricultural Policy:**

The **New Agricultural Policy (2000)** has been considered as a balanced one considering the present requirement. The new policy has adopted a co-ordinated approach for bringing **Green Revolution**, White Revolution (related to milk and dairy products) and Blue Revolution (related to aqua/fish culture). Therefore, the policy has been termed as a policy of promising Rainbow Revolution.

Considering the growing requirement of food for attaining food self-sufficiency and to attain food security for the millions of people of the country the policy has faced a great challenge. To fulfill this requirement attainment of 4 per cent growth rate in agricultural output is a must. But the New Policy has not spelt out any such target in quantitative terms.

Secondly, the New Policy has also failed to identify those backward states which are still lagging in utilizing their agricultural potential. Therefore, a balanced approach should be undertaken to remedy these loopholes.

Thirdly, the New Policy argued in favour of encouraging private investment in agriculture which would help the big farmers, but the large numbers of small farmers are not going to be supported by such private investment which needs to be promoted by public investment.

Fourthly, the New Policy argued in favour of private sector participation through contract farming by land leasing arrangements. But introduction of such a step in a labour-surplus economy is highly questionable.

Lastly, there is a lack of co-ordination between the Central and State Governments in implementing various promotional steps for the development of agricultural sector. Thus, the centre and the states should co-ordinate in

implementing various provisions of new policy and should develop a monitoring mechanism to evaluate the implementation of the policy in a most rational manner.

For the Tenth Plan period (2002-07), the credit flow into agriculture and allied activities from all banking agencies is projected at Rs. 7,36,370 crore, which is more than three times the credit flow during the Ninth Plan.

Thus, under the general impression that Indian agriculture operates amidst a number of restraints and controls and those farmers do not receive the benefits of free trade as compared to other sectors of the economy, the new National Agricultural Policy, 2000 thus has taken note of this impression and proposed freeing of agriculture sector from various restrictions.

The Central Government has taken a lead in repealing some of restrictive legislations. However, as agriculture is a state subject, most of the restrictions are actually imposed by states such as Andhra Pradesh, Tamil Nadu, Gujarat and Maharashtra. Thus; the State Governments should take effective steps for freeing agriculture.

In this connection, the Economic Survey, India, 2000-2001 observed, "For the Indian farmer, it is essential that he looks to the whole country as a sign of unrestricted market. After further opening up of the trade regime under WTO from April 2001, it is all the more necessary that farmers look not only to the domestic market, but also seize opportunities in the global market for improved value added realization and diversification. Export of processed agro-products would be the key to improved export realization which is possible only if the domestic policies allow unrestricted movement, storage and liberal trade regime. Thus, for agriculture related products, inputs and services, all restrictions including SSI reservation would have to be removed."

**ECONOMIC SYSTEM:** - Economic system usually are classified as capitalist, socialist or mixed. No company is purely market or purely commands, but they tend to lean to one direction or another. If an economy is considered to be a market economy with a private ownership, it is so classified because the market and private ownership dominate the economy. When an economy moves to more balance between market and command or between public and private ownership, it is considered mixed. In a command economy, resources are allocated and controlled by governmental decision.

### **Liberalization:**

The economic reforms that were introduced were aimed at liberalizing the Indian business and industry from all unnecessary controls and restrictions.

They indicate the end of the licence-permit-quota raj. Liberalization of the Indian industry has taken place with respect to:

1. Abolishing licensing requirement in most of the industries except a short list,
2. Freedom in deciding the scale of business activities i.e., no restrictions on expansion or contraction of business activities,
3. Removal of restrictions on the movement of goods and services,
4. Freedom in fixing the prices of goods services,
5. Reduction in tax rates and lifting of unnecessary controls over the economy,
6. Simplifying procedures for imports and exports, and
7. Making it easier to attract foreign capital and technology to India.

### **Privatization:**

The new set of economic reforms aimed at giving greater role to the private sector in the nation building process and a reduced role to the public sector.

To achieve this, the government redefined the role of the public sector in the New Industrial Policy of 1991.

The purpose of the sale, according to the government, was mainly to improve financial discipline and facilitate modernization.

It was also observe that private capital and managerial capabilities could be effectively utilized to improve the performance of the PSUs.

The government has also made attempts to improve the efficiency of PSUs by giving them autonomy in taking managerial decisions.

### **Globalization:**

Globalizations are the outcome of the policies of liberalization and privatization. Globalization is generally understood to mean integration of the economy of the country with the world economy, it is a complex phenomenon. It is an outcome of the set of various policies that are aimed at transforming the world towards greater interdependence and integration. It involves creation of networks and activities transcending economic, social and geographical boundaries. Globalization involves an increased level of interaction and interdependence among the various nations of the global economy. Physical geographical gap or political boundaries no longer remain barriers for a business enterprise to serve a customer in a distant geographical market.

### **NEW ECONOMIC POLICY 1991**

1. Delicensing. Only six industries were kept under Licensing scheme.
2. Entry to Private Sector. The role of public sector was limited only to four industries; rest all the industries were opened for private sector also.
3. Disinvestment. Disinvestment was carried out in many public sector enterprises.
4. **Liberalization of Foreign Policy.** The limit of foreign equity was raised to 100% in many activities, i.e., NRI and foreign investors were permitted to invest in Indian companies.
5. Liberalization in Technical Area. Automatic permission was given to Indian companies for signing technology agreements with foreign companies.
6. Setting up of **Foreign Investment Promotion Board (FIPB).** This board was set up to promote and bring foreign investment in India.
7. Setting up of Small Scale Industries. Various benefits were offered to small scale industries.

### **Three Major Components or Elements of New Economic Policy:**

There are three major components or elements of new economic policy- Liberalization, Privatization, Globalization.

#### **1. Liberalization:**

Liberalization refers to end of licence, quota and many more restrictions and controls which were put on industries before 1991. Indian companies got liberalization in the following way:

- a) Abolition of licence except in few.
- b) No restriction on expansion or contraction of business activities.
- c) Freedom in fixing prices.
- d) Liberalization in import and export.
- e) Easy and simplifying the procedure to attract foreign capital in India.
- f) Freedom in movement of goods and services
- g) Freedom in fixing the prices of goods and services.

#### **2. Privatization:**

Privatization refers to giving greater role to private sector and reducing the role of public sector. To execute policy of privatization government took the following steps:

- a) Disinvestment of public sector, i.e., transfer of public sector enterprise to private sector
- b) Setting up of Board of Industrial and Financial Reconstruction (BIFR). This board was set up to revive sick units in public sector enterprises suffering loss.

c) Dilution of Stake of the Government. If in the process of disinvestments private sector acquires more than 51% shares then it results in transfer of ownership and management to the private sector.

### **3. Globalization:**

It refers to integration of various economies of world. Till 1991 Indian government was following strict policy in regard to import and foreign investment in regard to licensing of imports, tariff, restrictions, etc. but after new policy government adopted policy of globalisation by taking following measures:

I.Import Liberalisation. Government removed many restrictions from import of capital goods.

**II.Foreign Exchange Regulation Act (FERA) was replaced by Foreign Exchange Management Act (FEMA)**

III.Rationalisation of Tariff structure

IV.Abolition of Export duty.

V.Reduction of Import duty.

As a result of globalization physical boundaries and political boundaries remained no barriers for business enterprise. Whole world becomes a global village.

Globalization involves greater interaction and interdependence among the various nations of global economy.

### **Effects of Liberalization and Globalization:**

The factors and forces of business environment have lot of influence over the business. The common influence and impact of such changes in business and industry are explained below:

#### **1. Increasing Competition:**

After the new policy, Indian companies had to face all round competition which means competition from the internal market and the competition from the MNCs. The companies which could adopt latest technology and which were having large number of resources could only survive and face the competition. Many companies could not face the competition and had to leave the market.

For example, Weston Company which was a leader in T. V. market with more than 38% share in T.V. market lost its control over the market because of all round competition from MNCs. By 1995-96, the company almost became unknown in the T.V market.

#### **2. More Demanding Customers:**

Prior to new economic policy there were very few industries or production units. As a result there was shortage of product in every sector. Because of this shortage the market was producer-oriented, i.e., producers became key persons in the market. But after new economic policy many more businessmen joined the production line and various foreign companies also established their production units in India.

As a result there was surplus of products in every sector. This shift from shortage to surplus brought another shift in the market, i.e., producer market to buyer market. The market became customer- oriented and many new schemes were made by companies to attract the customer. Nowadays products are produced/manufactured keeping in mind the demands of the customer.

#### **3. Rapidly Changing Technological Environment:**

Before or prior to new economic policy there was a small internal competition only. But after the new economic policy the world class competition started and to stand this global competition the companies need to adopt the world class technology.

To adopt and implement the world class technology the investment in R & D department has to increase. Many pharmaceutical companies increased their investment in R and D department from 2% to 12% and companies started spending a large amount for training the employees.

#### **4. Necessity for Change:**

Prior to 1991 business enterprises could follow stable policies for a long period of time but after 1991 the business enterprises have to modify their policies and operations from time to time.

#### **5. Need for Developing Human Resources:**

Before 1991 Indian enterprises were managed by inadequately trained personnel's. New market conditions require people with higher competence skill and training. Hence Indian companies felt the need to develop their human skills.

#### **6. Market Orientation:**

Earlier firms were following selling concept, i.e., produce first and then go to market but now companies follow marketing concept, i.e., planning production on the basis of market research, need and want of customer.

#### **7. Loss of Budgetary Support to Public Sector:**

Prior to 1991 all the losses of Public sector were used to be made good by government by sanctioning special funds from budgets. But today the public sectors have to survive and grow by utilising their resources efficiently otherwise these enterprises have to face disinvestment. On the whole the policies of Liberalisation, Globalisation and Privatisation have brought positive impacts on Indian business and industry. They have become more customer focus and have started giving importance to customer satisfaction.

#### **8. Export a Matter of Survival:**

The Indian businessman was facing global competition and the new trade policy made the external trade very liberal. As a result to earn more foreign exchange many Indian companies joined the export business and got lot of success in that. Many companies increased their turnover more than double by starting export division. For example, the Reliance Company, Videocon, MRF, Ceat Tires, etc. got a great hold in the export market.

#### **INDUSTRY:**

##### **1) Industrial policy Resolution 1948:**

The first important industrial policy statement was made in the Industrial policy Resolution (IPR), 1948. The main thrust of IPR, 1948 was to lay down the foundation of mixed economy whereby the private and public sector was accepted as important components in the development of industrial economy of India. **The policy divided the industries into four broad categories:**

**(i) Industries with Exclusive State Monopoly:** It included industries engaged in the activity of atomic energy, railways and arms and ammunition.

**(ii) Industries with Government Control:** It included the industries of national importance and so needs to be registered. 18 such industries were put under this category eg. fertilizers, heavy chemical, heavy machinery etc.

**(iii) Industries in the Mixed Sector:** It included the industries where private and public sector were allowed to operate. Government was allowed to review the situation to acquire any existing private undertaking.

**(iv) Industries under Private Sector:** Industries not covered by above categories fell in this category.

IPR, 1948 gave public sector vast area to operate. Government took the role of catalytic agent of industrial development. The resolution assigned complementary role to small-scale and cottage industries. The foreign capital which was seen with suspect in the pre-independent era was recognized as an important tool to speedup up industrial development.

#### **POINTS TO REMEMBER:**

- ⊕ After independence the first industrial policy was declared on 6th April, 1948 by then union industry minister Mr. Shyama Prasad Mukherjee.
- ⊕ Resolution accepted importance of both public & private sector.

- ⊕ This policy established a base for mixed & controlled economy in India.
- ⊕ Exclusive state monopoly includes industries of armed & ammunition, atomic energy, railway, transport. A monopoly of central government.
- ⊕ State monopoly for new units includes coal, iron, steel, aircraft, manufacturing, Shipbuilding etc. central government look after this but after 10 years government will review the situation.
- ⊕ State regulations includes industries of machine, tools, chemicals, fertilizers, Cement, paper etc. government of India did not undertake responsibility.
- ⊕ The field of private enterprises includes industries which did not come under the above three groups. It also give importance to small and cottage industries.

### **Industries (Development and Regulation) Act (IDRA), 1951**

IDRA, 1951 is the key legislation in the industrial regulatory framework. IDRA, 1951 gave powers to the government to regulate industry in a number of ways. The main instruments were the regulation of capacity (and hence output) and power to control prices. It specified a schedule of industries that were subject to licensing. Even the expansion of these industries required prior permission of the government which means the output capacity was highly regulated. The Government was also empowered to control the distribution and prices of output produced by industries listed in the schedule. The IDR Act gave very wide powers to the Government. This resulted in more or less complete control by the bureaucracy on the industrial development of the country.

The main provisions of the IDRA, 1951 were:

- a) All existing undertakings at the commencement of the Act, except those owned by the Central Government were compulsorily required to register with the designated authority.
- b) No one except the central Government would be permitted to set up any new industrial undertaking "except under and in accordance with a licence issued in that behalf by the Central Government."
- c) Such a license or permission prescribed a variety of conditions, such as, location, minimum standards in respect of size and techniques to be used, which the Central Government may approve.
- d) Such licenses and clearances were also required in cases of 'substantial expansion' of an existing industrial undertaking.

### **Industrial Policy Resolution, 1956**

IPR, 1956 is the next important policy statement. The important provisions are as follows:

- (1) **New classification of Industries:** IPR, 1956 divided the industries into the following three categories:
  - (a) **Schedule A industries:** The industries that were the monopoly of state or Government. It included 17 industries. The private sector was allowed to operate in these industries if national interest so required.
  - (b) **Schedule B industries:** In this category of industries state was allowed to establish new units but the private sector was not denied to set up or expand existing units e.g. chemical industries, fertilizer, synthetic, rubber, aluminum etc.
  - (c) **Schedule C industries:** The industries not mentioned in the above category formed part of Schedule C. Thus the IPR, 1956 emphasized the mutual existence of public and private sector industries.
- (2) **Encouragement to Small-scale and Cottage Industries:** In order to strengthen the small-scale sector supportive measures were suggested in terms of cheap credit, subsidies, reservation etc.
- (3) **Emphasized on Reduction of Regional Disparities:** Fiscal concessions were granted to open industries in backward regions. Public sector enterprises were given greater role to develop these areas.

The basic rationale of IPR, 1956 was that the state had to be given primary role for industrial development as capital was scarce and entrepreneurship was not strong. The public sector was enlarged dramatically so as to allow it to hold commanding heights of the economy.

### Monopolies Commission

In April 1964, the Government of India appointed a Monopolies Inquiry Commission "to inquire into the existence and effect of concentration of economic power in private hands." The Commission looked at concentration of economic power in the area of industry. On the basis of recommendation of the commission, Monopolistic and Restrictive Trade Practices Act (MRTP Act), 1969 was enacted. The act sought to control the establishment and expansion of all industrial units that have asset size over a particular limit

#### 3) Industries policy resolution 1956.

- ❖ Also known as economic constitution of India.
- ❖ It was declared on 30th April 1956.
- ❖ Basic objective was socialist pattern of society.
- ❖ Every new policy accepted the 1956 industrial policy resolution as its base.
- ❖ Develop heavy industries & machines institutions, speed up industrialization and accelerate rate of growth and expand public sector.
- ❖ Reduce disparities of income and wealth, build up co-operative sectors, prevent monopoly & concentration of wealth & income in the hands of a small number of individuals'.
- ❖ Stress was laid on co-operation between public & private sectors but more importance given to public sector.
- ❖ Under this policy reservation of industries came.
- ❖ Reservation of industries means clear cut clarification of industries.

#### > Three schedules came under the reservation of industries:

- 1) **Schedule A - 17 industrial areas**, complete monopoly. Under this provisions known as CPSU (central public sector undertakings) which was latter known as PSU (public sector undertakings)
  - 2) **Schedule B- 12 industrial areas**, state government review, included the compulsory licensing and transportation
  - 3) **Schedule C** – the field of private enterprises.
- ❖ Schedule B & C industries came under the license quota permit regime.
  - ❖ Focus on small industries & khaddi and village industries.
  - ❖ This is considered as the most important industrial policy of India.

#### Industries policy statement 1969.

- ❖ For solving the shortcomings of licensing policy which was started in 1956.
- ❖ Experts & industrialist told that licensing policy is serving just an opposite purpose.
- ❖ Reasons of licensing- exploitation of resources, price control of goods, checking concentration of economic power, channelizing investment in to desired direction.
- ❖ Finally in 1969 a new industrial licensing policy was allowed.
- ❖ Under this MRTP act came known as monopolies restrictive trade practices act with a limit of 25 crore. Green field ventures and take- over of other firms as per MRTP act came to be known as MRTP companies.

#### Industrial Policy statement 1973:

The Policy Statement of 1973 drew up a list of industries to be started by large business houses so that the competitive effort of small industries was not affected. The entry of competent small and medium entrepreneurs was encouraged in all industries. Large industries were permitted to start operations in rural and backward areas with a view to developing those areas and enabling the growth of small industries around.

#### Industrial Policy Statement, 1977: The main elements of the new policy were:

- 1. Development of Small-Scale Sector:** The main thrust of the new industrial policy was an effective promotion of cottage and small industries. Government initiated wide-spread promotional and supportive measures to encourage small sector. The small sector was classified into 3 categories viz. Cottage and

household industries which provide self-employment; tiny sector and small-scale industries. The purpose of the classification was to specifically design policy measures for each category. The policy statement considerably expanded the list of reserved items for exclusive manufacture in the small-scale sector.

**2. Restrictive Approach towards Large Business Houses:** The large scale sector was allowed in basic, capital goods and high-tech industries. The policy emphasized that the funds from financial institutions should be made available largely for the development of small sector. The large sector should generate internal finance for financing new projects or expansion of existing business.

**3. Expanding Role of Public sector:** The industrial policy stated that the public sector would be used not only in the strategic areas but also as a stabilizing force for maintaining essential supplier for the consumer.

Further, the policy statement reiterated restrictive policy towards foreign capital whereby the majority interest in ownership and effective control should rest in Indian hand.

#### POINTS TO REMEMBER:

- Core industries such as iron, steel, cement, coal, electricity in future known as basic industries and infrastructure industries.
- Schedule A is not a part of compulsory licensing policy out of 6 crore industries. Firm apply for licensing policy having assets of 25 crore or more.
- Concept of joint sector was developed, partnership among center, state & private sector.
- Government has been facing foreign exchange regulation so in 1973 FERA ( Foreign Exchange Regulation Act ) came, known as Draconian Act because it hamper the growth and modernization of industry.
- MNCs allowed to set-up their subsidiaries.

#### Industrial policy statement 1977:

- Established by **Janta Government**.
- This statement is opposite of industrial policy statement 1973.
- Foreign investment were prohibited which promote foreign investment through technology transfer.
- In 1977 concept of tiny enterprises came.
- Redefinition of small and cottage industries and emphasis on village industries.
- DIC (district industries center) were set up to promote small & cottage industries.
- Democratic decentralization at khadi and village industries
- Attention on prices of essential commodities of everyday use.

#### Industrial policy resolution 1980:

The industrial policy 1980 emphasized that the public sector is the pillar of economic infrastructure for reasons of its greater reliability, for the large investments required and the longer gestation periods of the projects crucial for economic development. The IPR1956 forms the basis of this statement. The important features of the policy were:

#### 1. Effective Management of Public Sector:

The policy emphasized the revival of efficiency of public sector undertaking

#### 2. Liberalization of Industrial licensing:

The policy statement provided liberalized measures in the licensing in terms of automatic approval to increase capacity of existing units under MRTP and FERA. The asset limit under MRTP was increased. The relaxation from licensing was provided for large number of industries. The broad-banding concept was introduced so that flexibility is granted to the industries to decide the product mix without applying for a new license.

#### 3. Redefining Small-Scale Industries:

The investment limit to define SSI was increased to boost the development of this sector. In case of tiny sector the investment limit was raised to Rs.1 lakh; for small scale unit the investment limit was raised from Rs.10 lakh to Rs.20 lakh and for ancillaries from Rs.15 lakh to Rs. 25 lakh.

Industrial policy, 1980 focused attention on the need for promoting competition in the domestic market, technological up gradation and modernization. The policy laid the foundation for an increasingly competitive export based industries and for encouraging foreign investment in high-technology areas.

#### **POINTS TO REMEMBER:**

- ✚ Revised of industrial policy statement 1977.
- ✚ Foreign investment through technology transfer allowed.
- ✚ M RTP limit 50 crores.
- ✚ DIC continued.
- ✚ Licensing was simplified, liberal attitude towards expansion of private sector.

#### **Industrial policy resolution 1985 & 1986**

- ✚ Foreign investment further simplified, equity holding of MNCs in Indian subsidiary 49% with Indian partnership holding 51% share.
- ✚ M RTP limit 100 crores.
- ✚ Compulsory licensing of industries.
- ✚ Sunrise industries such as telecommunication, computerization & electronics.
- ✚ Modernization & profitability of public sector.
- ✚ Imported raw materials got boost, use of foreign exchange permits in area of FERA.
- ✚ Many new technologies & scientific approach for agriculture.

#### **NEW INDUSTRIAL POLICY 1991**

In June 1991 Narsimamh Rao government took over charge and new industrial policy came under the liberalized form Sever BOP crisis, gulf of war higher oil prices, depleting fastly foreign reserves, inflation peaking and gross fiscal deficit also.

#### **Financial support from IMF.**

Government declared broad changes in industrial policy on 24th June 1991.

#### **De reservation of industries came of three industries-**

- 1) Atomic energy ( nuclear, mining, fuel fabricant
- 2) Arms ammunition, Defense equipment and warship
- 3) Railway transport

#### **Delicensing of industries came :**

1. Distillation & brewing of alcoholic drinks
2. Cigar cigarettes and other substitutes of prepared tobacco
3. Electronic, aerospace and all types of defense equipment
4. Industrial explosive including match box, detonating fuses, safety fuses, gunpowder and nitrocellulose.
5. Hazardous chemicals
- ✚ Liberalized policy of FDI (foreign direct investment) 1991, FPI (Foreign portfolio investment) 1994
- ✚ Government announced its policy towards small scale sector on 6th august 1991.
- ✚ Micro small medium enterprise development act 2006.
- ✚ Small and medium enterprises development bill 2005 was introduced in parliament on 12th may 2005 approved by parliament and named as small medium enterprises development act 2006 effective from 2nd oct 2006.

#### **Manufacturing :**

1. Micro- 25 lakh
2. Small- 5 crore
3. Medium- 10 crore

### Service equipment :

- 1) Micro- 10 lakh
  - 2) Small- 2 crore
  - 3) Medium- 5 crore
- ✚ Foreign exchange regulation act was liberalized on 8th January 1993.
  - ✚ FERA was replaced by FEMA (foreign exchange management act) in Dec 1999
  - ✚ BIFR (Board for industrial and financial reconstruction) was established under sick industrial companies' act 1985. The board started its functions from 15th may 1987
  - ✚ Process of disinvestment started in public sector in 1991-1992
  - ✚ To minimize the financial burden on public sector enterprises the government has started voluntary retirement scheme for the employees by giving full compensation to employees. This is called golden handshake scheme.
  - ✚ To evaluate the problems of financial sickness of small industries the government had constituted Nayak committee which submitted its report in September 1992.
  - ✚ NELP- New exploration licensing policy 1999

### Government has granted MINI RATANA status to three public sector units-

- 1) IRCTC (Indian railway catering and Tourism Corporation)
- 2) Satluz hydro power corporation
- 3) National hydro power corporation

>SIDO- small industries development organization 1954

### MAHARATNA STATUS given to these public sector units:-

- 1) ONGC- oil and Natural Gas Corporation.
- 2) NTPC- national thermal power corporation.
- 3) Steel authority of India.
- 4) Coal India ltd.
- 5) Indian Oil Corporation.
- 6) BHEL- Bharat heavy electrical ltd
- 7) GAIL- Gas authority of India ltd

### Rest all NAVRATNA COMPANY

- ✚ In 1985 Tiwari committee recommendations government introduced SICA sick industrial companies act later on 1st Jan 1987 a statutory institution named BIFR( board for industrial & financial reconstruction was setup) later on Omkar committee gave recommendations to modify SICA & role of BIFR.
- ✚ Disinvestment commission appointed in august 1996 under the chairmanship of GB Ram Krishna. Commission was reconstituted under the chairmanship of RM Patil in 2001 objectives- to protect interest of employees.

### MONEY & BANKING

**Money:** Money may be defined as anything which is generally acceptable as a medium of exchange and at the same time acts as a measure, store of value and standard of deferred payment.

#### Functions of Money:

##### 1. Primary Functions

- a. Medium of exchange
- b. Common measure of value or unit of value

##### 2. Secondary Functions

- a. Standard of deferred payment
- b. Store of value
- c. Transfer of value

### **3. Contingent Functions**

- a. Basis of credit
- b. Liquidity
- c. Basis of price mechanism
- d. Maximum profit to the producers
- e. Maximum satisfaction to the consumers
- f. Basis of distribution of income

**Barter Exchange:** It implies the direct exchange of goods for goods without the use of money.

#### **Difficulties involved in the Barter Exchange:**

1. Lack of a common measure of value.
2. Lack of double coincidence of wants
3. Lacks of standard of deferred payments.
4. Lack of store of value.
5. Lack of divisibility.
6. Difficulty in exchange of services

**Supply of Money:** Total stock of money (currency notes, coins and demand deposit of banks) in circulation are held by the public at a given point of time.

Supply of money does not include cash balance held by central and state govt. and stock of money held by banking system of country as they are not in actual circulation of the country.

**Measures of Money Supply** = Currency held by Public + Net Demand Deposits held by commercial banks

$$M1 = C + DD + OD$$

C = Currency and coins with the public

DD = Demand deposits of the public with the banks

OD = Other deposits

M2 = M1 + Post office savings deposits

M3 = M1 + Time deposits of commercial banks

M4 = M3 + Total deposits with the post office saving organization.

#### **Banks:**

**Commercial Banks:** Commercial Banks are financial institution who accepts deposits from the public and provide loans facilities for investment with the aim of earning profit.

### Functions of Commercial Banks

#### 1. Primary functions:-

- (a) Accepting deposits
- (b) Advancing loans
- (c) Discounting bill of exchange.

#### 2. Secondary functions:-

1. Agency function
  - (a) Transfer of fund
  - (b) Collection of funds
  - (c) Purchase and sale of shares and securities on behalf of the customers
  - (d) Collection of dividend and interest
  - (e) Payment of bills and insurance premium on behalf of customers
  - (f) Acting as executor and trustee of will
  - (g) Acting as correspondent and representative of customer and provide letter of credit to the customer.

#### 2. General utility function

- (a) Purchase and sell of foreign exchange.
- (b) Issuance of travelers cheque.
- (c) Safe custody of valuable goods in lockers.
- (d) Underwriting of securities.

**Central Banks:** The central Bank is the apex institution of monetary and financial system of a country. It makes monetary policy of the country in public interest. It manages, supervises and facilitates the banking system of the country.

### Functions of Central Banks

1. Bank of Issue
2. Banker to the Government
3. Banker's Bank and Supervisor.
4. Controller of credit.
5. Lender of last resort
6. Custodian of foreign exchange reserves

### MONEY CREATION OR CREDIT CREATION BY COMMERCIAL BANKS

CREDIT is defined as finance made available by one party to another party on a certain rate of exchange.

The capacity of banks to create money or credit depends on (i) Amount of primary deposits and (ii) Legal reserve ratio(LRR).

**Legal Reserve Ratio(LRR):-** is fixed by the central bank of a country and it is the minimum ratio of deposit legally required to be kept as cash by banks.

**Cash Reserve Ratio(CRR):-** It is a part of LRR which is to be kept with the central bank.

**Statutory Liquidity Ratio(SLR):-** It is a part of LRR which is to be kept with the bank themselves.

Commercial bank's demand deposits are a part of money supply. Commercial banks lend money to the borrowers by opening demand deposit account in their names. The borrowers are free to use this money by writing cheques. According to definition demand deposits are a part of money supply. Therefore, by creating additional demand deposits bank create money. Money creation depends upon two factor: Primary deposits and Legal Reserve Ratio (LRR). Deposit Multiplier =  $1/LRR$  Total Deposit creation = Initial deposit X  $1/LRR$ .

**Repo rate :** Repo rate is the rate at which the central bank of a country (Reserve Bank of India in case of India) lends money to commercial banks in the event of any shortfall of funds. Repo rate is used by monetary authorities to control inflation.

**Description:** In the event of inflation, central banks increase repo rate as this acts as a disincentive for banks to borrow from the central bank. This ultimately reduces the money supply in the economy and thus helps in arresting inflation.

**Reverse repo rate :** Reverse repo rate is the rate at which the central bank of a country (Reserve Bank of India in case of India) borrows money from commercial banks within the country. It is a monetary policy instrument which can be used to control the money supply in the country.

**Description:** An increase in the reverse repo rate will decrease the money supply and vice-versa, other things remaining constant. An increase in reverse repo rate means that commercial banks will get more incentives to park their funds with the RBI, thereby decreasing the supply of money in the market.

#### **Importance of Money Supply:**

Growth of money supply is an important factor not only for acceleration of the process of economic development but also for the achievement of price stability in the economy.

There must be controlled expansion of money supply if the objective of development with stability is to be achieved. A healthy growth of an economy requires that there should be neither inflation nor deflation. Inflation is the greatest headache of a developing economy.

A mild inflation arising out of the creation of money by deficit financing may stimulate investment by raising profit expectations and extracting forced savings. But a runaway inflation is highly detrimental to economic growth. The developing economies have to face the problem of inadequacy of resources in initial stages of development and it can make up this deficiency by deficit financing. But it has to be kept strictly within safe limits.

Thus, increase in money supply affects vitally the rate of economic growth. In fact, it is now regarded as a legitimate instrument of economic growth. Kept within proper limits it can accelerate economic growth but exceeding of the limits will retard it. Thus, management of money supply is essential in the interest of steady economic growth.

#### **Concept of Money Supply and Its Measurement:**

By money supply we mean the total stock of monetary media of exchange available to a society for use in connection with the economic activity of the country.

According to the standard concept of money supply, it is composed of the following two elements:

1. Currency with the public,
2. Demand deposits with the public.

Before explaining these two components of money supply two things must be noted with regard to the money supply in the economy. First, the money supply refers to the total sum of money available to the public in the economy at a point of time. That is, money supply is a stock concept in sharp contrast to the national income which is a flow representing the value of goods and services produced per unit of time, usually taken as a year.

Secondly, money supply always refers to the amount of money held by the public. In the term public are included households, firms and institutions other than banks and the government. The rationale behind considering money supply as held by the public is to separate the producers of money from those who use money to fulfill their various types of demand for money.

Since the Government and the banks produce or create money for the use by the public, the money (cash reserves) held by them are not used for transaction and speculative purposes and are excluded from the standard measures of money supply. This separation of producers of money from the users of money is important from the viewpoint of both monetary theory and policy.

#### **Let us explain the two components of money supply at some length:**

##### **Currency with the Public:**

In order to arrive at the total currency with the public in India we add the following items:

1. Currency notes in circulation issued by the Reserve Bank of India.
2. The number of rupee notes and coins in circulation.
3. Small coins in circulation.

It is worth noting that cash reserves with the banks has to be deducted from the value of the above three items of currency in order to arrive at the total currency with the public. This is because cash reserves with the banks must remain with them and cannot therefore be used for making payments for goods or by any commercial bank's transactions.

It may further be noted that these days paper currency issued by Reserve Bank of India (RBI) are not fully backed by the reserves of gold and silver, nor it is considered necessary to do so. Full backing of paper currency by reserves of gold prevailed in the past when gold standard or silver standard type of monetary system existed.

According to the modern economic thinking the magnitude of currency issued should be determined by the monetary needs of the economy and not by the available reserves of gold and silver. In other developed countries, since 1957 Reserve Bank of India follows Minimum Reserve System of issuing currency.

Under this system, minimum reserves of Rs. 200 crores of gold and other approved securities (such as dollars, pound sterling, etc.) have to be kept and against this any amount of currency can be issued depending on the monetary requirements of the economy.

RBI is not bound to convert notes into equal value of gold or silver. In the present times currency is inconvertible. The word written on the note, say 100 rupee notes and signed by the governor of RBI that 'I promise to pay the bearer a sum of 100 rupees' is only a legacy of the past and does not imply its convertibility into gold or silver.

Another important thing to note is that paper currency or coins are fiat money, which means that currency notes and metallic coins serve as money on the bases of the fiat (i.e. order) of the Government. In other words, on the authority of the Government no one can refuse to accept them in payment for the transaction made. That is why they are called legal tender.

##### **Demand Deposits with the Public:**

The other important component of money supply are demand deposits of the public with the banks. These demand deposits held by the public are also called bank money or deposit money. Deposits with the banks are broadly divided into two types: demand deposits and time deposits. Demand deposits in the banks are those deposits which can be withdrawn by drawing cheques on them.

Through cheques these deposits can be transferred to others for making payments from whom goods and services have been purchased. Thus, cheques make these demand deposits as a medium of exchange and therefore make them to serve as money. It may be noted that demand deposits are fiduciary money proper.

Fiduciary money is one which functions as money on the basis of trust of the persons who make payment rather than on the basis of the authority of Government. Thus, despite the fact that demand deposits and cheques through which they are operated are not legal tender, they function as money on the basis of the trust commanded by those who draw cheques on them. They are money as they are generally acceptable as medium of payment.

Bank deposits are created when people deposit currency with them. But far more important is that banks themselves create deposits when they give advances to businessmen and others. On the basis of small cash reserves of currency, they are able to create a much larger amount of demand deposits through a system called fractional reserve system which will be explained later in detail.

In the developed countries such as USA and Great Britain deposit money accounted for over 80 per cent of the total money supply, currency being a relatively small part of it. This is because banking system has greatly developed there and also people have developed banking habits.

On the other hand, in the developing countries banking has not developed sufficiently and also people have not acquired banking habits and they prefer to make transactions in currency. However in India after 50 years of independence and economic development the proportion of bank deposits in the money supply has risen to about 50 per cent.

#### **Four Measures of Money Supply:**

Several definitions of money supply have been given and therefore various measures of money supply based on them have been estimated. First, different components of money supply have been distinguished on the basis of the different functions that money performs. For example, demand deposits, credit card and currency are used by the people primarily as a medium of exchange for buying goods and services and making other transactions.

Obviously, they are money because they are used as a medium of exchange and are generally referred to as M1. Another measure of money supply is M 3 which includes both M1 and time deposits held by the public in the banks. Time deposits are money that people hold as store of value.

The main reason why money supply is classified into various measures on the basis of its functions is that effective predictions can be made about the likely effects on the economy of changes in the different components of money supply. For example, if M1 is increasing firstly it can be reasonably expected that people are planning to make a large number of transactions.

On the other hand, if time-deposits component of money supply measure M3 which serves as a store of value is increasing rapidly, it can be validly concluded that people are planning to save more and accordingly consume less.

Therefore, it is believed that for monetary analysis and policy formulation, a single measure of money supply is not only inadequate but may be misleading too. Hence various measures of money supply are prepared to meet the needs of monetary analysis and policy formulation.

Recently in India as well as in some developed countries, four concepts of money supply have been distinguished. The definition of money supply given above represents a narrow measure of money supply and is generally described as M1.

From April 1977, the Reserve Bank of India has adopted four concepts of money supply in its analysis of the quantum of and variations in money supply. These four concepts of measures of money supply are explained below.

#### **Money Supply M1 or Narrow Money:**

This is the narrow measure of money supply and is composed of the following items:

$M_1 = C + DD + OD$

Where, C = Currency with the public

DD = Demand deposits with the public in the commercial and cooperative banks.

OD = Other deposits held by the public with Reserve Bank of India.

The money supply is the most liquid measure of money supply as the money included in it can be easily used as a medium of exchange, that is, as a means of making payments for transactions.

Currency with the public (C) in the above measure of money supply consists of the following:

- (i) Notes in circulation.
- (ii) Circulation of rupee coins as well as small coins
- (iii) Cash reserves on hand with all banks.

Note that in measuring demand deposits with the public in the banks (i.e., DD), inter-bank deposits, that is, deposits held by a bank in other banks, are excluded from this measure.

In the other deposits with Reserve Bank of India (i.e., OD) deposits held by the Central and State Governments and a few others such as RBI Employees Pension and Provident Funds are excluded.

However, these other deposits of Reserve Bank of India include the following items:

- (i) Deposits of Institutions such as UTI, IDBI, IFCI, NABARD etc.
- (ii) Demand deposits of foreign Central Banks and Foreign Governments.
- (iii) Demand deposits of IMF and World Bank.

It may be noted that other deposits of Reserve Bank of India constitute a very small proportion (less than one per cent).

#### **Money Supply M2:**

M2 is a broader concept of money supply in India than M1. In addition to the three items of M1, the concept of money supply M2 includes savings deposits with the post office savings banks. Thus,

$M_2 = M_1 + \text{Savings deposits with the post office savings banks.}$

The reason why money supply M2 has been distinguished from M1 is that saving deposits with post office savings banks are not as liquid as demand deposits with commercial and cooperative banks as they are not chequable accounts. However, saving deposits with post offices are more liquid than time deposits with the banks.

#### **Money Supply M3 or Broad Money:**

M3 is a broad concept of money supply. In addition to the items of money supply included in measure M1, in money supply M3 time deposits with the banks are also included. Thus

$M_3 = M_1 + \text{Time Deposits with the banks.}$

It is generally thought that time deposits serve as store of value and represent savings of the people and are not liquid as they cannot be withdrawn through drawing cheque on them. However, since loans from the banks can be easily obtained against these time deposits, they can be used if found necessary for transaction purposes in this way. Further, they can be withdrawn at any time by forgoing some interest earned on them.

It may be noted that recently M3 has become a popular measure of money supply. The working group on monetary reforms under the chairmanship of late Prof. Sukhamoy Chakravarty recommended its use for monetary planning of the economy and setting target of the growth of money supply in terms of M3.

Therefore, recently RBI in its analysis of growth of money supply and its effects on the economy has shifted to the use of M3 measure of money supply. In the terminology of money supply employed by the Reserve Bank of India till April 1977, this M3 was called Aggregate Monetary Resources (AMR).

#### **Money Supply M4:**

The measure M4 of money supply includes not only all the items of M3 described above but also the total deposits with the post office savings organisation. However, this excludes contributions made by the public to the national saving certificates. Thus,

$$M4 = M3 + \text{Total Deposits with Post Office Savings Organisation.}$$

Let us summaries the four concepts of money supply as used by Reserve Bank of India in the following tabular form:

<b>Money Supply</b>			
<b>M1</b>	<b>M2</b>	<b>M3</b>	<b>M4</b>
=	=	=	=
<b>Currency (C)</b>	<b>M1</b>	<b>M1</b>	<b>M3</b>
+	+	+	+
Demand Deposits (D) + Other Deposits of RBI (DD)	Savings Deposits with Post Office Savings Banks	Time Deposits with the Banks	Total Deposits of Post Office Savings Organisation (excluding NSC)

#### **Determinants of Money Supply:**

In order to explain the determinants of money supply in an economy we shall use M, concept of money supply which is the most fundamental concept of money supply. We shall denote it simply by M rather than M1. This concept of money supply is composed of currency held by the public (Cp) and demand deposits with the banks (D). Thus

$$M = Cp + D \dots(1)$$

Where, M = Total money supply with the public

Cp = Currency with the public

D = Demand deposits held by the public

The two important determinants of money supply as described in equation (1) are (a) the amounts of high-powered money which is also called Reserve Money by the Reserve Bank of India and (b) the size of money multiplier.

We explain below the role of these two factors in the determination of money supply in the economy:

#### **1. High-Powered Money (H):**

The high-powered money which we denote by H consists of the currency (notes and coins) issued by the Government and the Reserve Bank of India. A part of the currency issued is held by the public, which we designate as Cp and a part is held by the banks as reserves which we designate as R.

A part of these currency reserves of the banks is held by them in their own cash vaults and a part is deposited in the Reserve Bank of India in the Reserve Accounts which banks hold with RBI. Accordingly, the high-powered money can be obtained as sum of currency held by the public and the part held by the banks as reserves. Thus

$$H = Cp + R \dots (2)$$

Where, H = the amount of high-powered money

Cp = Currency held by the public

R = Cash Reserves of currency with the banks.

It is worth noting that Reserve Bank of India and Government are producers of the high-powered money and the commercial banks do not have any role in producing this high-powered money (H). However, commercial banks are producers of demand deposits which are also used as money like currency.

But for producing demand deposits or credit, banks have to keep with themselves cash reserves of currency which have been denoted by R in equation (2) above. Since these cash reserves with the banks serve as a basis for the multiple creation of demand deposits which constitute an important part of total money supply in the economy, it provides high-poweredness to the currency issued by Reserve Bank and Government.

A glance at equations (1) and (2) above will reveal that the difference in the two equations, one describing the total money supply and the other high-powered money, is that whereas in the former, demand deposits (D) are added to the currency held by the public, in the latter it is cash reserves (R) of the banks that are added to the currency held by the public.

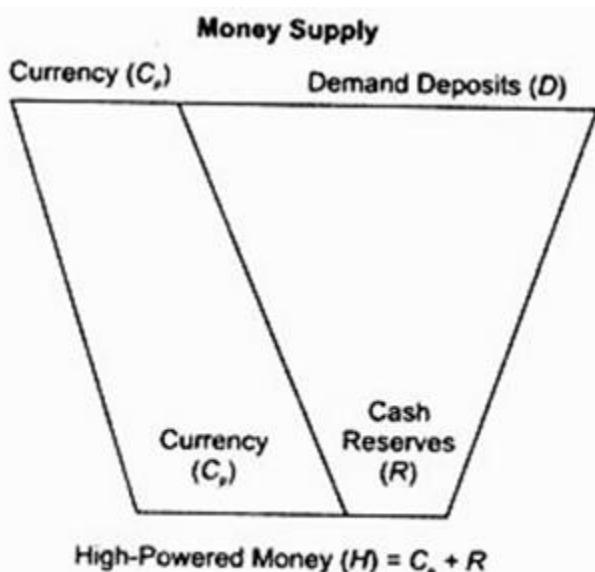
In fact, it is against these cash reserves (R) that banks are able to create a multiple expansion of credit or demand deposits due to which there is large expansion in money supply in the economy. The theory of determination of money supply is based on the supply of and demand for high-powered money.

Some economists therefore call it 'The H Theory of Money Supply'. However, it is more popularly called 'Money-multiplier Theory of Money Supply' because it explains the determination of money supply as a certain multiple of the high-powered money. How the high-powered money (H) is related to the total money supply is graphically depicted in Fig. 16.1.

The base of this figure shows the supply of high-powered money (H), while the top of the figure shows the total stock of money supply. It will be seen that the total stock of money supply (that is, the top) is determined by a multiple of the high-powered money (H). It will be further seen that whereas currency held by the public (Cp) uses the same amount of high-powered money, that is, there is one-to-one relationship between currency held by the public and the money supply.

In sharp contrast to this, bank deposits (D) are a multiple of the cash reserves (R) of the banks which are part of the supply of high-powered money. That is, one rupee of high-powered money kept as bank reserves gives rise to much more amount of demand deposits. Thus, the relationship between money supply and the high-powered money is determined by the money multiplier.

The money multiplier which we denote by m is the ratio of total money supply (M) to the stock of high-powered money, that is,  $m = M/H$ . The size of money multiplier depends on the preference of the public to hold currency relative to deposits, (that is, ratio of currency to deposits which we denote by K) and banks' desired cash reserves ratio to deposits which we call r. We explain below the precise multiplier relationship between high-powered money and the total stock of money supply.



**Fig. 16.1. The High-Powered Money and the Stock of Total Money Supply**

It follows from above that if there is increase in currency held by the public which is a part of the high-powered money with demand deposits remaining unchanged, there will be a direct increase in the money supply in the economy because this constitutes a part of the money supply.

If instead currency reserves held by the banks increase, this will not change the money supply immediately but will set in motion a process of multiple creation of demand deposits of the public in the banks. Although banks use these currency reserves held by the public which constitutes a part of the high-powered money to give more loans to the businessmen and thus create demand deposits, they do not affect either the amount of currency or the composition of high-powered money. The amount of high-powered money is fixed by RBI by its past actions. Thus, changes in high-powered money are the result of decisions of Reserve Bank of India or the Government which owns and controls it.

## 2. Money Multiplier:

Money multiplier is the degree to which money supply is expanded as a result of the increase in high-powered money. Thus

$$m = M/H$$

Rearranging we have,  $M = H \cdot m \dots (3)$

Thus money supply is determined by the size of money multiplier ( $m$ ) and the amount of high-powered money ( $H$ ). If we know the value of money multiplier we can predict how much money will change when there is a change in the amount of high-powered money.

Change in the high-powered money is decided and controlled by Reserve Bank of India, the money multiplier determines the extent to which decision by RBI regarding the change in high-powered money will bring about change in the total money supply in the economy.

### Size of Money Multiplier:

Now, an important question is what determines the size of money multiplier. It is the cash or currency reserve ratio  $r$  of the banks (which determines deposit multiplier) and currency-deposit ratio of the public (which we denote by  $k$ ) which together determines size of money multiplier. We derive below the expression for the size of multiplier.

From equation (1) above, we know that total money supply ( $M$ ) consists of currency with the public ( $C_p$ ) and demand deposits with the banks. Thus

$$M = C_p + D \quad \dots(1)$$

The public hold the amount of currency in a certain ratio of demand deposits with the banks. Let this currency-deposit ratio be denoted by  $k$ .

$$C_p = kD$$

Substituting  $kD$  for  $C_p$  in equation (1) we have

$$M = kD + D = (k + 1)D \quad \dots(2)$$

Now take equation which defines high-powered money ( $H$ ) as

$$H = C_p + R \quad \dots(3)$$

where  $R$  represents cash or currency reserves which banks keep as a certain ratio of their deposits and is called cash-reserve ratio and is denoted by  $r$ . Thus

$$R = rD$$

Now substituting  $rD$  for  $R$  and  $kD$  for  $C_p$  in equation (3) we have

$$\begin{aligned} H &= kD + rD \\ H &= (k + r)D \end{aligned} \quad \dots(4)$$

Now, money multiplier is ratio of total money supply to the high-powered money, therefore we divide equation (1) by equation (4), to get the value of multiplier, which we denote by  $m$ . Thus

$$m = \frac{M}{H} = \frac{(k+1)D}{(k+r)D} = \frac{k+1}{k+r}$$

or, Money multiplier =  $\frac{M}{H} = \frac{1+k}{r+k}$

or,  $M = H = \frac{1+k}{r+k} \quad \dots(5)$

where  $r$  = Cash-reserve ratio of the banks

$k$  = Currency-deposit ratio of the public.

where  $H$  is the high-powered money and  $\frac{1+k}{r+k}$  is money multiplier

**From above it follows that money supply in the economy is determined by the following:**

1.  $H$ , that is, the amount of high-powered money, which is also called reserve money
  2.  $r$ , that is, cash reserve ratio of banks (i.e., ratio of currency reserves to deposits of the banks)
- This cash reserve ratio of banks determines the magnitude of deposit multiplier.
3.  $k$ , that is, currency-deposit ratio of the public.

**From the equation (4) expressing the determinants of money supply, it follows that money supply will increase:**

1. When the supply of high-powered money (i.e., reserve money)  $H$  increases;
2. When the currency-deposit ratio ( $k$ ) of the public decreases; and
3. When the cash or currency reserves-deposit ratio of the banks ( $r$ ) falls.

#### **Cash Reserve Ratio of the Banks and the Deposit Multiplier:**

Because of fractional reserve system, with a small increase in cash reserves with the banks, they are able to create a multiple increase in total demand deposits which are an important part of money supply. The ratio of

change in total deposits to a change in reserves is called the deposit multiplier which depends on cash reserve ratio.

The value of deposit multiplier is the reciprocal of cash reserve ratio, ( $dm = 1/r$ ) where  $dm$  stands for deposit multiplier. If cash reserve ratio is 10 per cent of deposits, then  $dm = 1/0.10 = 10$ . Thus deposit multiplier of 10 shows that for every Rs. 100 increase in cash reserves with the banks, there will be expansion in demand deposits of the banks by Rs. 1000 assuming that no leakage of cash to the public occurs during the process of deposit expansion by the banks.

#### **Currency-Deposit Ratio of the Public and Money Multiplier:**

However, in the real world, with the increase in reserves of the banks, demand deposits and money supply do not increase to the full extent of deposit multiplier. This is for two reasons. First, the public does not hold all its money balances in the form of demand deposits with the banks.

When as a result of increase in cash reserves, banks start increasing demand deposits, the people may also like to have some more currency with them as money balances. This means during the process of creation of demand deposits by banks, some currency is leaked out from the banks to the people.

This drainage of currency to the people in the real world reduces the magnitude of expansion of demand deposit and therefore the size of money multiplier. Suppose the cash reserve ratio is 10 per cent and cash or currency of Rs. 100 is deposited in bank A. The bank A will lend out Rs. 90 and therefore create demand deposits of Rs. 90 and so the process will continue as the borrowers use these deposits for payment through cheques to others who deposit them in another bank B.

However, if borrower of bank A withdraws Rs. 10 in cash from the bank and issues cheques of the remaining borrowed amount of Rs. 80, then bank B will have only Rs. 80 as new deposits instead of Rs. 90 which it would have if cash of Rs. 10 was not withdrawn by the borrower. With these new deposits of Rs. 80, bank B will create demand deposits of Rs. 72, that is, it will lend out Rs. 72 and keep Rs. 8 as reserves with it ( $80 \times 10/100 = 8$ ).

The drainage of currency may occur during all the subsequent stages of deposit expansion in the banking system. The greater the leakage of currency, the lower will be the money multiplier. We thus see that the currency-deposit ratio, which we denote by  $k$ , is an important determinant of the actual value of money multiplier.

It is important to note that deposit multiplier works both ways, positively when cash reserves with banks increase, and negatively when the cash reserves with the banks decline. That is, when there is a decrease in currency reserves with the banks, there will be multiple contraction in demand deposits with the banks.

#### **Excess Reserves:**

In the explanation of the expansion of demand deposits or deposit multiplier we have assumed that banks do not keep currency reserves in excess of the required cash reserve ratio. The ratio  $r$  in the deposit multiplier is the required cash reserve ratio fixed by Reserve Bank of India.

However, banks may like to keep with themselves some excess reserves, the amount of which depends on the extent of liquidity (i.e. availability of cash with them) and profitability of making investment and rate of interest on loans advanced to business firms. Therefore, the desired reserve ratio is greater than the statutory minimum required reserve ratio. Obviously, the holding of excess reserves by the banks also reduces the value of deposit multiplier.

#### **Conclusion:**

Theory of determination of money supply explains how a given supply of high-powered money (which is also called monetary base or reserve money) leads to multiple expansion in money supply through the working of money multiplier. We have seen above how a small increase in reserves of currency with the banks leads to a multiple expansion in demand deposits by the banks through the process of deposit multiplier and thus causes growth of money supply in the economy.

Deposit multiplier measures how much increase in demand deposits (or money supply) occurs as a result of a given increase in cash or currency, reserves with the banks depending on the required cash reserve ratio ( $r$ ) if there are no cash drainage from the banking system. But in the real world drainage of currency does take place which reduces the extent of expansion of money supply following the increase in cash reserves with the banks.

Therefore, the deposit multiplier exaggerates the actual increase in money supply from a given increase in cash reserves with the banks. In contrast, money multiplier takes into account these leakages of currency from the banking system and therefore measures actual increase in money supply when the cash reserves with the banks increase.

The money multiplier can be defined as increase in money supply for every rupee increase in cash reserves (or high-powered money), drainage of currency having been taken into account. Therefore, money multiplier is less than the deposit multiplier.

It is worth noting that rapid growth in money supply in India has been due to the increase in high-powered money  $H$ , or what is also called Reserve Money (Lastly Reserve Bank of India, the money multiplier remaining almost constant).

The money supply in a country can be changed by Reserve Bank of India by undertaking open market operations, changing minimum required currency reserve-deposit ratio, and by varying the bank rate. The main source of growth in money supply in India is creation of credit by RBI for Government for financing its budget deficit and thus creating high-powered money.

Further, though the required currency reserve-deposit ratio of banks can be easily varied by RBI, the actual currency reserve-deposit ratio cannot be so easily varied as reserves maintained by banks not only depend on minimum required cash reserve ratio but also on their willingness to hold excess reserves.

Lastly, an important noteworthy point is that though money multiplier does not show much variation in the long run, it can change significantly in the short run causing large variations in money supply. This unpredictable variation in money multiplier in the short run affecting money supply in the economy prevents the Central Bank of a country from controlling exactly and precisely the money supply in the economy.

#### **Factors Determining Money Supply: RBPS Analysis:**

In its analysis of factors determining money supply in India and sources of variation in it, Reserve Bank of India does not follow any explicit theory of money supply such as money multiplier theory explained above. It provides only purely accounting or ex-post analysis of variations in money supply and the factors or sources causing these variations.

Although Reserve Bank provides figures of the high-powered money in its analysis, it virtually clubs high-powered money with the ordinary money to calculate the total money supply in the country and therefore does not give due importance to the high-powered money as an important factor causing variation in money supply in the economy.

Further, Reserve Bank also does not lay emphasis on the two behavioural ratios, namely, desired currency-deposit ratio ( $k$ ) of the public and desired cash reserve ratio ( $r$ ) of the banks, as determinants of money supply, though it provides ex-post or realised figures of these ratios. We explain below Reserve Bank's analysis of sources of variation in money supply.

**Reserve Bank of India classifies factors determining money supply into the following categories:**

- Government borrowing from the banking system;
- Borrowing of the private or commercial sector from the banking system;
- Changes in net foreign assets held by the Reserve Bank of India caused by changes in balance of payments position; and
- Government's currency liabilities to the public.

**(a) Bank Credit to the Government:**

When the Government expenditure exceeds government revenue and there is deficit in government's budget, then it resorts to borrowing from the Reserve Bank of India which creates new currency notes for the purpose. This creation of new currency for financing the deficit of the Central Government Budget is known as monetization of deficit.

It was previously called deficit financing. Monetization of deficit is an important source of change in money supply in the economy. It may be noted here that since 1995, a good part of budget deficit is financed through open market operations by RBI by selling Government securities to the banks.

This is done to neutralize the monetary impact of large accumulation of net foreign exchange assets with RBI caused by capital inflows on a large scale. Therefore, there has been a decline in RBI's credit to the Government in the last about 10 years.

The Government also borrows from the ordinary commercial banks. When banks lend money to the Government, they create credit. For instance, for purchase of food grains by the Food Corporation of India, the banks give a large amount of loan to the Government. The creation of deposits by the banks when they create credit for the Government leads to the increase in money supply in the economy.

**(b) Bank Credit to the Commercial or Private Sector:**

The private sector also borrows from the banking system when its own resources are less than its total expenditure. This also adds to the money supply with the public because when banks lend, they create credit. This also affects the money supply in the same manner as the Government borrowing from the banking system.

There is, however, an important difference. Whereas Government can borrow more or less compulsorily from Reserve Bank of India, the private sector cannot do so from the commercial banks.

**(c) Changes in Net Foreign Exchange Assets:**

Changes in the foreign exchange assets held by the Reserve Bank can also bring about a change in the money supply. The change in the net foreign assets may be caused by balance of payment situation. Suppose the balance of payments is adverse or unfavourable and therefore available foreign exchange is less than the country needs to pay for its imports, both visible and invisible.

In order to meet this adverse balance of trade the country will have to dispose of some of its foreign exchange assets. If there is a net adverse balance of payments, rupees would flow into the Reserve Bank which pays out foreign exchange. This would have the effect of reducing the Reserve Money (i.e. the high-powered money) in India and the contraction of the money supply with the public. Opposite result would follow when there is a net surplus in the balance of payments of a country.

It follows from above that a deficit in the balance of payments on current account decreases the supply of rupee currency (that is, high-powered or reserve money) in the economy and thereby causes contraction in money supply with the public. On the contrary, a surplus in the balance of payments will increase the foreign exchange assets and thereby will lead to the expansion in reserve money and money supply in the economy.

It may also be noted that apart from balance of payments on current account foreign exchange reserves or assets may also come through either foreign aid or deposits in Indian banks by NRI or foreign direct investment made by foreign companies in India. For example, in recent years there has been a large-scale inflow of foreign exchange through investment made by foreign companies and NRI deposits in India.

As a result, our foreign exchange reserves have substantially gone up, which have resulted in the issue and expansion of rupee currency in circulation. In August 2004 foreign exchange reserves has risen to US \$ 119 billion. But RBI has neutralized its monetary impact by mopping up liquidity of the banks through open market operations by selling them Government securities. This is called sterilization of inflows of foreign exchange.

Further, to deal with the problem of excess liquidity of the Indian banks caused by the rise in foreign exchange reserves, and with a view to check rise in inflation rate Reserve Bank of India has in April 2004 entered into an agreement with the Central Government to sterilize the monetary impact of these reserves.

With this agreement, **Market Stabilisation Scheme (MSS)** has been started. Under this scheme the Central Government has issued Market Stabilisation Bonds. These bonds were sold by RBI to commercial banks to mop up excess liquidity of Rs. 60,000 crore in 2004-05. But these Rs. 60,000 crore were kept apart in special deposits with RBI and were not meant to be used by the Government.

It should be noted that if the foreign exchange reserves are used to import goods in short supply, it will help in lowering inflation rate for two reasons. First, this will reduce rupee currency in circulation which will cause reduction in money supply in the economy.

Contraction in money supply will help in controlling inflation through reducing aggregate demand. Secondly, the imports of goods will increase aggregate supply of goods in the economy which will tend to lower prices.

#### **(d) Government's Currency Liabilities to the Public:**

Changes in money supply in the economy are also brought about by Government's currency liabilities to the public. Coins and one-rupee notes represent Government's currency liabilities to the public. On 31st March 2004-05, there were outstanding balances of Government currency liabilities of Rs. 7291 crores as compared to Rs. 7071 crores on March 31, 2003. If Government's currency liabilities increase, the money supply also increases.

#### **Budget Deficit and Money Supply:**

A budget deficit is also an important source of expansion of money supply in the economy. There are two possible links between budget deficit and growth in money supply. First, when following an expansionary fiscal policy the government raises its expenditure without financing by extra taxation and thereby causing a budget deficit, it will tend to raise interest rate. This happens when budget deficit is financed through borrowing from the market.

As a result, demand for money or loanable funds increases which, given the supply of money, causes interest rate to rise. Rise in interest rate tends to reduce or crowd out private investment. If the Central Bank is following the policy of a fixed interest rate target, when the government resorts to borrowing to finance the budget deficit, then to prevent the rise in interest rate the Central Bank will take steps to increase the money supply in the economy.

The second link between budget deficit and expansion in money supply is direct. This occurs when the Central Bank itself purchases government securities when the government resorts to borrowing. The Central Bank is said to monetize budget deficit when it purchases government securities as it prints new notes for the purpose and gives it to the government for meeting public expenditure.

In some countries such as the US, Federal Reserve (which is the Central Bank of the USA) enjoys a good deal of independence from the Treasury (i.e., the Government) and voluntarily decides when and how much to purchase government securities to finance its budget deficit.

#### **Central Bank's Dilemma:**

The Central Bank of a country faces a dilemma in deciding whether or not to monetize budget deficit. If the Central Bank does not monetize budget deficit to meet its increased expenditure, the government will borrow from the market and in the absence of any accommodating monetary policy this will tend to raise interest rate and thereby reduce or crowd out private investment.

Referring to the policy of Federal Reserve of the United States, Dornbusch, Fischer and Startz write, "There is accordingly a temptation for the Federal Reserve to prevent crowding out by buying government securities thereby increasing the money supply and hence allows an expansion in income without a rise in interest rates". But the policy of monetization of budget deficit by the Central Bank involves a risk. If the economy is working near-full employment level, that is, at near-full production capacity, monetisation of budget deficit will cause inflation in the economy.

However, if the economy is in the grip of a severe depression, the risk of causing inflation through monetisation of budget deficit and consequent growth in money supply is not much there. It follows from above that in any particular case the Central Bank, if it enjoys freedom from the Government, has to judge whether it should adopt accommodatory monetary policy to achieve its goal of interest-targeting or allow fiscal expansion through monetisation of budget deficit accompanied by the tight monetary policy to check inflation. It is the latter course of action that was adopted by Reserve Bank of India before 1995 when government's fiscal deficit was high and a good part of it was monetised by it.

### Money Supply and the Open Economy:

The transactions of an open economy also affect the growth of money supply in it. In the open economy there is free flow of goods and services through trade with foreign countries. Besides, in the open economy there are flows of capital between countries. The impact of transactions of an open economy on the money supply can be better understood from national income identity of an open economy.

National income of the open economy is written as:

$$Y = C + I + G + NX \dots(1)$$

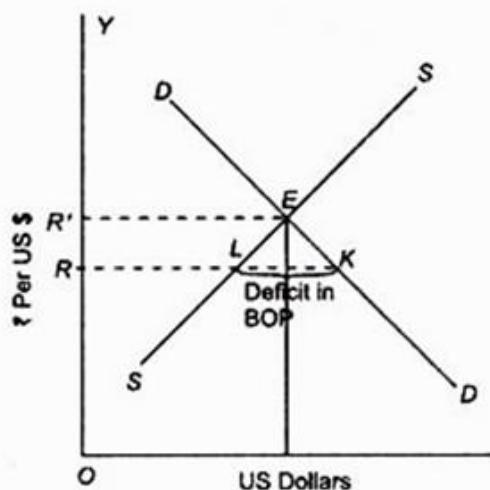
$$\text{or, } NX = Y - (C + I + G) \dots(2)$$

where NX stands for net exports or trade balance. In the trade balance if we also include exports and imports of services (i.e., invisibles), then NX can be taken as current account balance.

The current account balance (NX) can be either positive or negative. If in equation (2) above aggregate expenditure ( $C + I + G$ ) exceeds national output ( $Y$ ), current account balance or NX will be negative, that is, imports will be greater than exports.

In other words, there will be deficit in current account of the balance of payments. On the other hand, if aggregate expenditure is less than national income [ $(C + I + G) < Y$ ], there will be surplus in the current account balance of payments. This implies that our exports will be greater than imports.

Now, if in a year there is deficit in current account, that is, NX is negative, it means our demand for foreign exchange, say, the US dollars, for imports of goods and services will exceed the supply of foreign exchange. This situation is depicted in Fig. 16.2 where the curve DD represents demand curve for foreign exchange (US \$) and SS is the supply curve of foreign exchange (US \$) at exchange rate (Rs. per US dollar) and OR and LK represent deficit in current account.



**Fig. 16.2. Deficit in Balance of Payments and Foreign Exchange Market**

If the economy is under flexible exchange rate regime and the Central Bank of the country does not intervene at all, the exchange rate will change to  $OR'$  and as a result deficit in current account balance will be eliminated

and equilibrium restored at the new exchange rate. If there is such a situation, there is no impact on the money supply.

However, if the Central Bank wants to maintain the exchange rate at OR, then current account deficit equal to LK has to be met. If there are no capital inflows, then to maintain the exchange rate at OR, the Central Bank of the country has to supply foreign exchange equal to LK out of the reserves held by it.

But when the Central Bank (RBI in case of India) pays out foreign exchange from its reserves, it will receive money (i.e., rupees in India) from importers of goods and services in return for foreign exchange paid to them to meet the deficit. Thus some money (say Indian rupees) will flow into the Central Bank and thus withdrawn from circulation.

As a result of Central Bank intervention to meet the current account deficit and to maintain the exchange rate money supply in the economy decreases. It is important to note that the Central Bank of the country cannot go on supplying foreign exchange reserves, year after year, for a long time because foreign exchange assets with the Central Bank are available in limited amount.

The above analysis of contraction in money supply as a result of use of foreign exchange reserves to meet the current account deficit is based on two assumptions. First, it is assumed that there are no capital flows to meet the deficit in current account balance. Second, it is assumed the exchange rate is not allowed to change as a result of in balance between demand and supply of foreign exchange due to current account deficit.

#### **Capital Inflows:**

However, if there are sufficient net capital inflows accruing from the capital account of the balance of payments, then deficit in current account (i.e., negative NX) can be met by these capital inflows. In this case there will be no impact of deficit in current account balance of payments on money supply in the economy.

Now take the opposite case of surplus in current account balance (i.e., when NX is positive). This implies that the supply of foreign exchange exceeds demand for it. In the absence of capital out-flows this excess supply of foreign exchange will have to be purchased by the Central Bank if exchange rate is to be maintained.

The Central Bank (RBI) will print new notes to pay for the purchase of foreign exchange. This will lead to the increase in money supply in the economy. However, if exchange rate is allowed to change, as is the case under flexible exchange rate system, the exchange rate will adjust to bring supply and demand for foreign exchange in equilibrium.

#### **Overall Balance of Payments and Capital Inflows:**

When in an open economy with flexible exchange rate regime there is deficit in overall balance of payments (i.e., on both current and capital accounts), it means that capital inflows are insufficient to bridge the gap in the balance of payments, then, in case of India, this has to be met with use of foreign exchange reserves by the Reserve Bank of India.

When Reserve Bank of India pays foreign exchange (e.g. US \$) to finance the deficit in overall balance of payments, it gets rupees in return. Thus rupee currency flows into the RBI. As a result, money supply (rupee currency) in the economy will decline.

However, under flexible rate system, if RBI does not intervene, the deficit in overall balance of payments will cause rupee to depreciate.

Now suppose there is surplus in overall balance of payment as capital inflows exceed the deficit in current account. The large capital inflows can occur due to heavy foreign direct investment (FDI) and portfolio investment by foreign institutional investors (FII) as it happened in some years in India, especially in 2006-07, 2007-08 and 2010-11.

In the absence of intervention by RBI under the flexible exchange rate system, these large capital inflows will cause appreciation of Indian Rupee. In fact, though RBI has been intervening in foreign exchange market from time to time, its intervention has been only limited. As a result, between Oct. 2006 and Oct 2007, rupee appreciated by 15 per cent.

By making our exports relatively expensive the appreciation of rupee adversely affects our exports and therefore growth in GNP and employment. Besides, appreciation of rupee makes imports relatively cheaper and leads to large imports of goods and materials and thereby harms our domestic manufacturing industries.

To prevent the high appreciation of the Indian Rupee RBI purchases US dollars from the foreign exchange market from time to time. When RBI purchases dollars from the foreign exchange market, it pays rupees to the sellers of foreign exchange. To do so more rupee currency is printed by RBI to pay for US dollars purchased by it.

In this way more rupee currency (i.e., high-powered money) comes into existence in the economy. Thus intervention by RBI to prevent appreciation of rupee results in increase in money supply in the economy.

The effect of large capital inflows and its effect on appreciation of currency and money supply in the Indian economy is illustrated in Fig. 16.3 where exchange rate of rupee for US dollars (Rs. per US \$) is measured on the Y-axis and number of US dollars are measured on the X-axis.

Initially the equilibrium between demand for and supply of dollars in the Indian foreign exchange market determines equilibrium exchange rate equal to Rs. 48 per US \$. As a result of large capital inflows supply curve of US dollars shifts to the right to  $S'S'$ . With this, at the existing exchange rate of Rs. 48 per US dollar, EH is the increase in capital inflows.

Now, under a variable exchange rate regime as it exists today, if exchange rate is allowed to adjust freely, rupee will rise to Rs. 45 per US dollar. If Reserve Bank wants to manage it and tries to maintain it at Rs. 48 per US dollar, it will have to buy US dollars equal to EH from the market. By buying US dollars equal to EH, RBI will cause the demand curve for US dollars to shift to the right to the new position  $D'D'$  and the new equilibrium is established at point H which corresponds to Rs. 48 per US dollar.

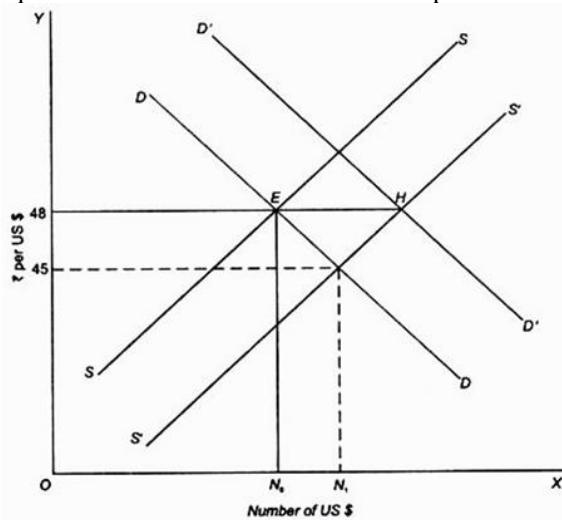


Fig. 16.3. Capital Inflows and Appreciation of Rupee

But for buying US dollars equal to EH, RBI will have to print new rupee currency to pay for US dollars. Thus more high-power money (i.e., rupee currency) would come into circulation in the Indian economy. Thus RBI did not intervene sufficiently to prevent the appreciation of rupee between Oct. 2006 and Oct. 2007.

This is because such intervention leads to the increase in money supply that is likely to cause inflation in the Indian economy. Therefore, RBI intervened only to a small degree and let the rupee appreciate to some extent.

On the other hand, in 2011 the RBI faced the opposite problem when after August 2011, there was net large capital outflow from India due to uncertainty caused by European debt crisis and economic slowdown in the US. The FIIs started selling Indian equity and bonds and converting rupee into US dollars.

This led to the increase in demand for dollars resulting in appreciation of US dollar and depreciation of Indian rupee. The value of rupee which was around Rs. 44 to a US dollar in the first week of September 2011

depreciated to around Rs. 53 in the second week of December 2011. This depreciation of rupee will make our imports costlier which will tend to raise inflation if not matched by fall in international commodity prices.

To prevent sharp depreciation of rupee the RBI intervened in the foreign exchange market by selling dollars in the market. Again its intervention was only limited. In fact, the RBI has no fixed target for maintaining exchange rate of rupee at any level and instead its policy is to allow exchange rate of rupee to fluctuate within a band. In fact, RBI faces a dilemma which we discuss below.

#### **RBI Dilemma: External Balance and Internal Balance:**

RBI faces a dilemma because if it does not intervene in the face of large capital inflows rupee will appreciate much which will adversely affect our exports and therefore growth of GNP and employment in our economy. On the other hand, if it intervenes and purchases enough US dollars from the market to prevent any appreciation of rupee, it will cause large increase in money supply that would cause higher rate of inflation.

A major objective of RBI is to control inflation. Therefore, RBI has to strike a balance between the two alternatives. It has been intervening in the foreign exchange market to prevent large appreciation of rupee. But it cannot buy inflows of foreign exchange indiscriminately as it leads to higher inflation.

RBI has also resorted to sterilization of increase in money supply by selling government securities to the banks and thereby getting back the money issued by it. But there is limit to this sterilization operation as it has not unlimited amount of government securities to sell them to the banks. Hence the dilemma faced by it. We explain the sterilization operations by RBI later.

It follows from above that the two objectives of external balance and internal balance clash with each other. External balance occurs when balance of payments is in equilibrium or close to it.

When external balance does not exist the Central Bank will either go on losing foreign exchange reserves which it cannot do so for long or it will be gaining foreign exchange reserves which also poses a problem as it leads to increase in money supply and causes inflationary pressures in the economy.

On the other hand, internal balance exists when the economy is in equilibrium at full employment or full productive capacity level without any inflationary pressures. Thus, to ensure internal balance requires that money supply should not be allowed to increase much. Since the two require different types of policy measure by the Central Bank, they clash with each other. Hence, the dilemma faced by the Central Bank.

#### **Sterilization by the Central Bank:**

Sterilization provides a way out of the problem of clash between the goals of external balance and internal balance. Sterilization refers to the action by the Central Bank of a country to offset or cancel the impact of its foreign exchange market intervention on the money supply through open market operations.

The sterilization measures can be used both to offset the reduction in money supply when in case of current account deficit the Central Bank of the country sells foreign exchange in the market and also when the Central Bank offsets the effect of increase in money supply when it buys foreign exchange from the market in case of surplus in balance of payments or when large capital inflows are coming into the economy.

Let us first explain sterilization operation by the Central Bank in case of deficit in current account of the balance of payments. The deficit in current account balance requires the Central Bank to sell foreign exchange from its reserves to prevent the depreciation of domestic currency (that is, to maintain the exchange rate constant).

The sale of foreign exchange in foreign exchange market by the Central Bank causes money supply in the economy to decrease that has deflationary effect on the economy. To avoid this adverse effect, the Central Bank buys government securities (i. e., bonds) through open market operations.

When it does so the Central Bank prints domestic currency to pay for the bonds it purchases. In this way money supply in the economy increases which offsets the decrease in money supply brought about by the Central Bank when it sells foreign exchange to prevent the depreciation of the domestic currency.

Thus, provided it has enough foreign exchange assets, with sterilization operations by the Central Bank persistent deficit in balance of payments is possible because it insulates the money supply changes in the domestic economy from the Central Bank intervention in the foreign exchange market.

### **Sterilization Operations in Case of Surplus in Balance of Payments or Large Capital Inflows:**

Now, we take up the opposite case when there is surplus in balance of payments or when large capital inflows are taking place. This situation requires that Central Bank intervenes in the foreign exchange market and buys foreign exchange inflows from the market to maintain the foreign exchange rate or to prevent the appreciation of domestic currency.

In the two years (2006-08) due to large net capital inflows in the Indian economy there was quite a large appreciation of the Indian rupee against US dollar that produced undesirable effects. Therefore, Reserve Bank intervened in the foreign exchange market by buying US dollars to prevent too much appreciation of the Indian rupee.

The purchase of foreign exchange (US dollars) from the foreign exchange market by the Reserve Bank led to the increase in money supply in the Indian economy that caused inflationary pressures. To sterilize the effect of this increase in money supply RBI undertook open market operations by selling government securities to the banks which paid rupees to it.

In this way some rupee currency had been withdrawn from the economy. In this way inflationary pressures created by the original increase in money supply through intervention in foreign exchange market have been offset.

### **INFLATION:**

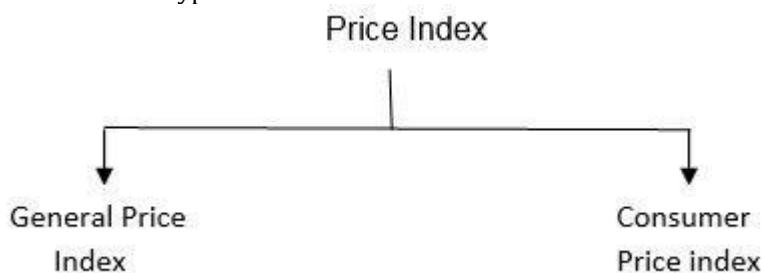
Inflation is defined as a **sustained increase** in the **general level of prices** for goods and services. It is measured as an **annual percentage increase**. As inflation rises, every rupee you own buys a smaller percentage of a good or service.

### **INDEX**

An Index number may be described as a **specialized average** designed to measure the **relative change** in the level of a phenomenon from **time to time**.

### **PRICE INDEX**

Price index is a **specialized average** that measures the **changes in prices** over a period of time. The price indices are of two types:



### **GENERAL PRICE INDEX (GPI)**

General Price Index measures the changes in average prices of goods and services. A **base year is selected** and its index is assumed as **100** and on this basis, price index for further period is calculated.

### **CONSUMER PRICE INDEX (CPI)**

Consumer Price Index measures the **average change in prices** paid by **ultimate consumers** for a **particular basket of goods and services** over a period of time. CPI actually measure the increase in prices a consumer will have to pay for the designated commodity basket (which may be **revised every four-five years** to factor in **changes in consumption pattern**)

**CONSTRUCTION OF PRICE INDEX**

Price Index = (Current year's price / Base year's Price) x 100  
 $= P_1/P_0 \times 100$

**MEASUREMENT OF INFLATION**

Inflation is measured with the help of **Whole-sale** or **Consumer price** index in India. The **percentage of rise** in the **price index** of a particular period from **previous period price index** is the **rate of inflation**.

Inflation = (current period price index - last period price index) / last period price index x 100

Inflation is calculated on the basis of **weighted index numbers**.

Note: **Base year** is used **only to calculate the index number**. The inflation is calculated as a percentage of rise in index number over last year.

**WEIGHTED INDEX NUMBERS**

In India various weighted price index are calculated. They are

1. Wholesale Price Index (WPI)
2. Consumer Price Index for Industrial Workers (CPI - IW)
3. Consumer Price Index for Urban Non - Manual Employees (CPI - UNME)
4. Consumer Price Index for Agriculture Labourers (CPI - AL)
5. Consumer Price Index for Rural Labourers (CPI - RL)



Among the above indices until **October 2009**, only the **WPI** was used to **calculate inflation** and **made public** through the newspapers. So, it is called the **head line inflation**. The other index numbers are **published as index numbers** and **not as inflation**.

The **weights are assigned** on the basis of **whole sale transaction (value of quantities)** for respective commodity groups for **WPI**. For other indices, the weights are assigned on the basis of **consumer expenditure survey**.

For example, in the wholesale market, out of the **total transaction** (value of quantities) 20.118 % of the transaction takes place in **primary products** in the **base year**. So, primary commodities are assigned **20.118 % weight**. In consumer expenditure survey, it was found that people spend **46.19%** of their total expenditure on food in the base year. So, food items are assigned with 46.19 % weight.

**WHOLE SALE PRICE INDEX (WPI)**

**The Authority responsible for Compilation and Release:** Office of the Economic Advisor, Department of Industrial Policy & Promotion

All Commodities	Weights
1. Primary Articles	20.1
2. Fuel and power	14.9
3. Manufactured products	65.0
<b>All food</b>	<b>24.3</b>
<b>Core Inflation</b>	<b>55.0</b>

**OLD CONSUMER PRICE INDICES**

Before **February 2011**, India had **four** consumer price indices viz. Consumer price Index for **Industrial Workers** (CPI-IW), Consumer Price Index for **Urban Non-Manual Employees** (CPI-UNME), Consumer Price index for **Agriculture Labourers** (CPI-AL) and Consumer Price Index for **Rural Labourers** (CPI - RL).

**CONSUMER PRICE INDEX FOR INDUSTRIAL WORKER - CPI (IW)**

This index measures the change in the price of commodity basket consumed by the **industrial workers**.

**AUTHORITY FOR COMPILATION & RELEASE:** Labour Bureau, Shimla, Ministry of Labour.

**USE:** Used for wage indexation in government and organized sector.

**CONSUMER PRICE INDEX FOR URBAN NON-MANUAL EMPLOYEES (CPI - UNME)**

This index measures the **change** in the **price of commodity basket** consumed by the non-manual employees like **office goers**. CPI-UNME earlier compiled by the Central Statistical Organisation as an independent index has since been **discontinued** and is currently linked to the **CPI-IW**.

**AUTHORITY FOR COMPILATION & RELEASE:** CSO - Central Statistical Organisation, Ministry of Statistics and Programme Implementation.

#### **CONSUMER PRICE INDEX FOR RURAL LABOURS AND AGRICULTURAL LABOURERS (CPI- AL)**

Consumer Price Index for Rural labours measures the change in the price of commodity basket consumed by **rural labourers** like **agriculture labourers**, labourers of **village and cottage industries** etc.

Consumer Price Index for **Agricultural Labourers (CPI-AL)** is a **subset** of Consumer Price Index for Rural Labours (**CPI-RL**). It is basically used for **revising minimum wages for agricultural labour** in different states.

**AUTHORITY FOR COMPILEATION AND RELEASE OF BOTH INDICES:** Labour Bureau, Shimla, Ministry of Labour.

#### **NEW CONSUMER PRICE INDICES**

The above consumer price indices cover only a **segment of population** like Agriculture Labour, Industrial worker etc., and **do not give a nationwide picture**. Therefore, three new indices are introduced with **base year of 2010 (January – December)** which cover **all segments of population on all India basis**. They are as follows:

- CPI (Rural)
- CPI (Urban)
- CPI (Combined)

These indices are published for **all India** as well as **State / Union Territory level**. These indices are released with **one-month time lag**. The **CPI (Combined)** is computed by combining **Rural and Urban index**. From **January 2012**, these new indices are released. In addition to this, **separate rural, urban, and combined Consumer Food Price Indices (CFPI)** for all India were released from **May 2014**. The **weighting diagram** for the new CPI series was derived on the basis of **average monthly consumer expenditure** of an **urban/rural household** obtained from the **Consumer Expenditure Survey data (2004-05) of 61<sup>st</sup> Round of the National Sample Survey (NSS)**. The **CSO** has revised the base year of the Consumer Price Index from **2010=100** to **2012=100** and the revised index numbers were released on **12 February 2015**.

General	Weights
1. Food, beverages & tobacco	49.7
2. Fuel and Light	9.5
3. Others	40.8
<b>Food (CFPI)</b>	<b>42.7</b>
<b>Core inflation (Non-food, non-fuel)</b>	<b>42.9</b>

#### **TYPES OF INFLATION**

Inflation can be classified on the basis of **rate of rise in prices** and on the **basis of causes**.

#### **DIFFERENT INFLATION BASED ON RATE OF RISE IN PRICES:**

**1. CREEPING INFLATION:-** Price rise at **very slow rate (less than 3%)** like that of a snail or creeper is called Creeping inflation. It is **regarded safe** and **essential for economic growth**.

**2. WALKING OR TROTTING INFLATION :-** Price rise **moderately** at the rate of **3 to 7% (or) less than 10%** is called Walking or trotting inflation. It is a **warning signal** to the government to be prepared to control inflation. If the inflation crosses this range, it will have **serious implication** on the economy and individuals.

**3. RUNNING INFLATION:-** Running inflation means **price rise rapidly** like the running of a horse at a rate of **10-20%**. It affects the **economy adversely**.

**4. HYPERINFLATION (OR) RUNWAY (OR) GALLOPING INFLATION:-** The price rise at very fast at double or triple digit rate from 20 to 100% or more is called Hyperinflation (or) Runaway (or) galloping inflation. Such a situation brings total collapse of the monetary system because of the continuous fall in the purchasing power of money.

### **DIFFERENT INFLATION BASED ON CAUSES**

#### **1. DEMAND PULL INFLATION**

Demand pull inflation arises due to higher demand for goods and services over the available supply. Higher demand for goods and services arises due to increase in income of the people, increase in money supply and change in the taste and preference of people etc. In other words, demand pull inflation takes place when increase in production lags behind the increase in money supply.

#### **2. COST PUSH INFLATION**

Price rise due to increased input costs like raw material, wages, profit margin etc., is called Cost push inflation.

Both demand pull inflation and cost push inflation are affected by forces of demand and supply.

### **FACTORS AFFECTING DEMAND**

#### **1. Increase in Money Supply**

Increase in money supply leads to price rise. More money available with people induces people to purchase more goods and services. It means there is an increase in demand. So, prices move upward.

#### **2. Increase in Disposable Income**

The increase in the disposable income leads to higher spending on the part of households. It hikes the level of price.

#### **3. Cheap Monetary Policy**

Cheap monetary policy means loan availability at very low interest rate and at easy terms. It leads to more investment by investors with loaned money. It pushes up the demand for capital goods and rise in price of the same.

#### **4. Increase in Public Expenditure**

Increase in government expenditure over its income, leads to deficit budget. Increase in government spending increases the demand for consumption and capital goods and services. It increases the price of both goods and services.

#### **5. Repayment of Public Debt**

The repayment of public debt borrowed by government to public leaves people with more money. It induces people to spend more. It ultimately leads to increase in price of goods and services.

### **FACTORS AFFECTING SUPPLY**

#### **1. Shortage of Factors of production**

The shortage in the factors of production viz., land, labour, and capital increases the cost of production. For example, shortage in the labour leads to higher wages. It increases the cost of production and price of goods and services.

#### **2. Industrial Disputes**

Industrial disputes lead to strike or lay off. It affects the production and supply of goods. It results in increased prices.

#### **3. Natural Calamities**

Natural calamities like earth quake, land slide and tsunami, affect production and supply of goods and services. The end result is price rise.

#### **4. Artificial Scarcities**

Artificial scarcities created by activities like hoarding and speculative trading in commodities in the commodities future market, results in price hike.

#### **5. Increase in Exports**

Increase in export of a particular commodity leads to shortage of goods in the domestic market. It pushes up prices.

#### **6. International Factors**

International factors like **oil price hike**, shortage in production of **certain commodities** leads to **higher import prices**.

### **EFFECTS OF INFLATION**

Inflation has impact on all the economic units. It has favorable impact on some and unfavorable impact on others. The effects are discussed under three different heads as under:

#### **1. REDISTRIBUTION OF INCOME OF WEALTH**

It redistributes income from one hand to another. It leads to loss to some group of people and gain to another group of people.

##### **a) DEBTORS VS CREDITORS**

In case of debtor and creditor, **debtor is gainer** and **creditor is loser**.

##### **b) PRODUCERS VS CONSUMERS**

In inflationary situation, the **producers stand to gain** and **consumers stand to lose**. The producer's profit will increase as a result of inflation. The purchasing power of money held by consumer declines. So, they have to pay more money to purchase the same amount of goods and services what they bought before inflation. Here, the **income of consumer gets transferred** from **consumers to producers**.

##### **c) FLEXIBLE INCOME GROUP VS FIXED INCOME GROUP**

The flexible income groups like sellers, self employed, and employees of private concerns **whose salary is adjusted according to inflation** do not get affected, but fixed income groups like **daily wage earners** lose as the **purchasing power of their income diminishes**.

##### **d) DEBENTURES OR BOND HOLDERS AND SAVERS VS EQUITY HOLDERS**

The Debentures or Bond holders and Savers receive **fixed periodical income** from their **financial assets**. The purchasing power of their asset **remains intact only if interest rate is more than rate of inflation**.

The security holder's income depends on the **profit of the company**. In inflationary situation, the companies **earn more profit**. So, the equity holders also earn more income.

#### **2. EFFECTS ON PRODUCTION AND CONSUMPTION**

The inflation may lead to **fall in the demand** for goods and services. It may **curtail the amount of production**. Inflation also leads to **reallocation of resources**. Sometimes, only few goods may experience price rise. In that case, the investment from other sectors may shift to these sectors.

In packaged items, in order to maintain same price per package, the producers reduce the quantity or quality or both instead of raising price. It means, **less production** and **consumption**.

#### **3. OTHER EFFECTS**

##### **a) BALANCE OF PAYMENT (BOP)**

High price **reduces** the amount of export and **increases import** from other countries where goods are available at cheaper rate. It results in **unfavorable balance of payment**.

##### **b) EXCHANGE RATE**

High import and low export means high demand for foreign currencies compared to domestic currency. This depreciates domestic currency.

##### **c) SOCIAL AND POLITICAL**

Higher rate of inflation leads to social and political tension. The political parties and organized group of people call for **strike, hartals and stage dharnas**.

#### **MEASURES TO CONTROL INFLATION**

The control of inflation needs a multi-pronged strategy. All the strategies need cooperation and harmony among them.

##### **1. MONETARY MEASURES**

**a) CREDIT CONTROL:-** It is performed by Reserve Bank of India.

**b) DEMONETIZATION OF CURRENCY:-** Demonetization of currency means declaring that hereafter **currencies of particular denominations are invalid**. It suddenly reduces the money to the extent of money kept in those particular denominations. It is resorted to **only in extreme cases**.

## **2. FISCAL MEASURES**

**a) REDUCTION IN UNNECESSARY EXPENDITURE:-** Reduction of unnecessary government expenditure means **less demand from government** side. It brings down the price level.

**b) INCREASE IN DIRECT TAXES:-** Increase in direct taxes like **income tax** reduces the **disposable income** available with people. It means **low demand from households**. Less demand leads to lower price.

**c) DECREASE IN INDIRECT TAXES:-** Decrease in indirect taxes like **excise duty, sales tax** brings the prices down.

### **d) SURPLUS BUDGET**

Surplus budget means **less expenditure than receipts**. It reduces the money supply and government demand for goods and services. The price level is brought down due to this.

## **3. TRADE MEASURES**

Trade measures refer to export and import of goods and services. In case of **shortage of goods in domestic market** the supply can be increased through **import of goods** from foreign countries at low or nil import duty. The restriction in the form of import licenses has to be eased to increase import. The higher supply helps to bring down the price.

## **4. ADMINISTRATIVE MEASURES**

### **a) RATIONAL WAGE POLICY**

Rational wage policy helps to keep the **cost of production under control**. The cost control means price control.

### **b) PRICE CONTROL**

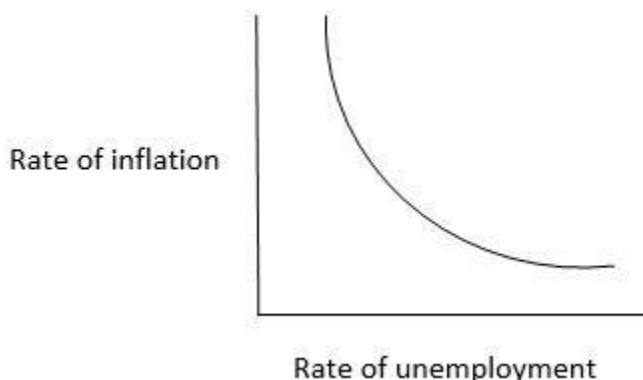
Direct price control also helps in inflation control. Price can be controlled by **fixing maximum price** limits through **administered price system** and **subsidy** from the government.

### **c) RATIONING**

Rationing of goods in short supply keeps the demand under control so that price comes under control.

## **PHILIPS CURVE**

Philips curve shows the relationship between **rate of inflation** and **rate of unemployment**. It shows that the relationship is **negative**. That is at **high rate of inflation** the unemployment rate is low as shown in figure below.



## **STAGFLATION**

Stagflation refers to the situation of **coexistence of stagnation and inflation** in the economy. Stagnation means **low National Income growth** and **high unemployment**. The Philips curve shows that at high rate of inflation, there is low rate of unemployment. But **stagflation proves the contrary**.

Before **1970s**, it was considered that at the time of inflation, the economy will be booming. 1970s scenario proved contrary with the **existence of inflation and stagnation**.

## **DEFLATION**

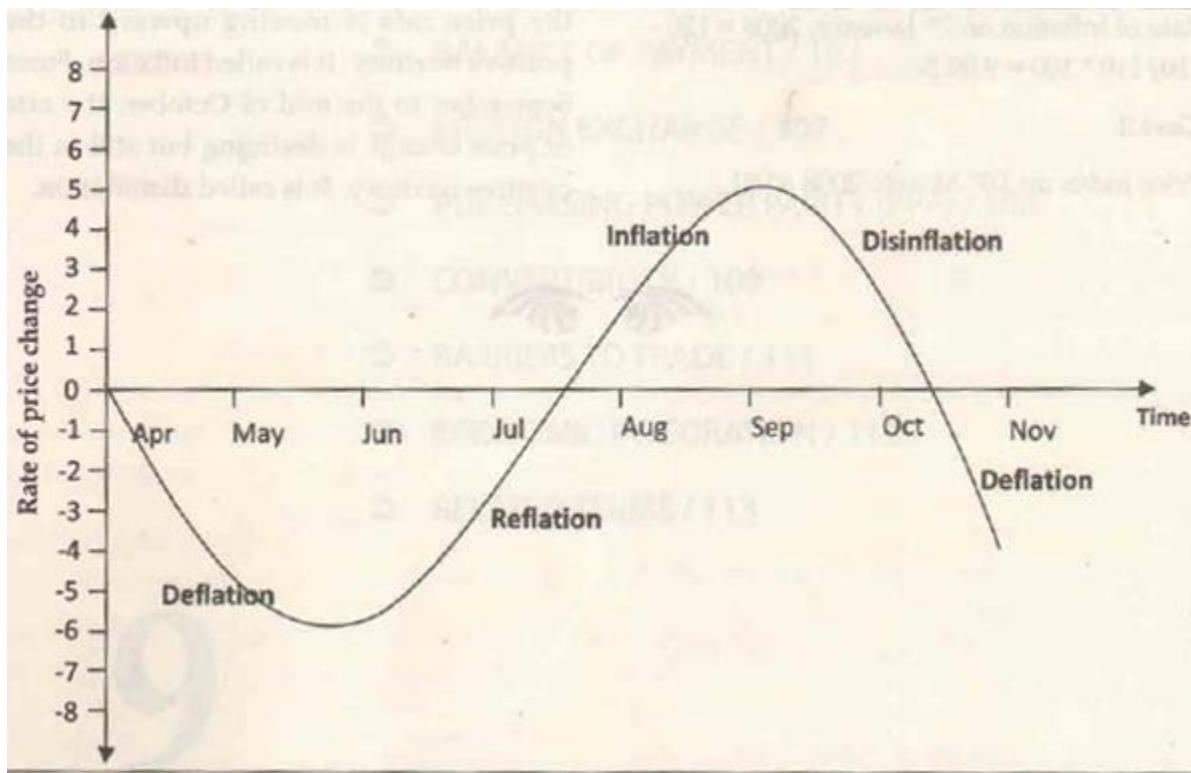
Deflation is opposite to that of inflation. The **persistent and appreciable fall** in the general level of prices is called as deflation. The rate of change of price index is **negative**. The effects, cause and measures are also in the **opposite direction**.

**DISINFLATION**

The rate of inflation at a **slower rate** is called disinflation. For example, if the inflation of last month was 6% and rate of inflation in the current month is 5% it is termed as disinflation.

**REFLATION**

Reflation means **deliberate action of government** to increase rate of inflation **to stimulate economy**. It is usually done to **redeem the economy** from deflationary situation.



The figure depicts the various rates of price changes in the economy. From the month of April to the end of May, the economy is experiencing **negative rate of price range**. It is called **deflation**. From the end of May to the mid of July, the price rate is recovering from negative zone. It is called **reflation**. From the mid of July, to the end of August, the price rate is moving upward in the positive territory. It is called **Inflation**. From September to the mid of October, the rate of price change is **declining** but still in the positive territory. It is called **disinflation**.

**CORE INFLATION**

Core inflation is a **measure of inflation** that **excludes certain items** that face **volatile price movements**. Core inflation eliminates products that can have **temporary price shocks** because these shocks can diverge from the **overall trend of inflation** and give a false measure of inflation.

**Impact or Effect of Inflation :**

- Inflation affects the pattern of production, a shift in production pattern takes place from consumer goods to luxury goods.
- On Investment: Inflation discourages entrepreneurs in investing as the risk involved in the future production would be very high with less hope for returns. Uncertainty about the future purchasing power of money discourages investment and savings.
- Inflation also results in black marketing. Sellers may stock up the goods to be sold in the future, anticipating further price rise.
- The effect of inflation is felt on distribution of income and wealth and on production.
- People with fixed income group are the worst sufferers of inflation. Those living off a fixed-income, such as retirees, see a decline in their purchasing power and, consequently, their standard of living.
- The entire economy must absorb repricing costs ("menu costs") as price lists, labels, menus and more have to be updated.

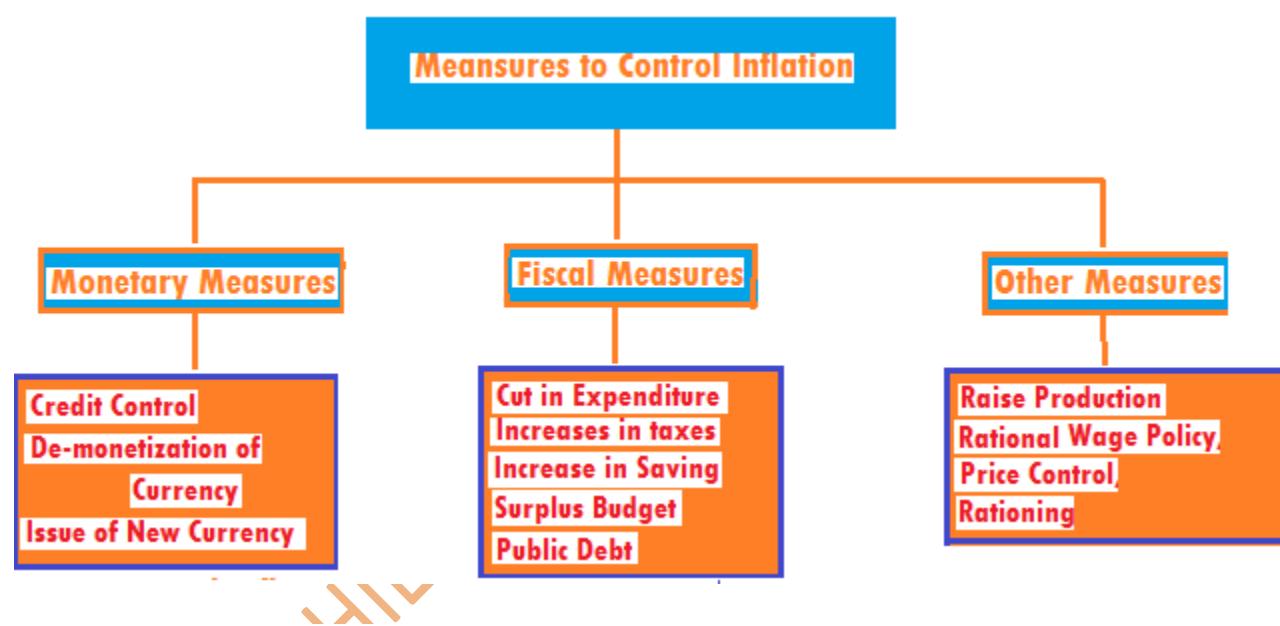
- If the inflation rate is greater than that of other countries, domestic products become less competitive.
- They add inefficiencies in the market, and make it difficult for companies to budget or plan long-term.
- On Exchange rate and trade: There can also be negative impacts to trade from an increased instability in currency exchange prices caused by unpredictable inflation.
- On Taxes: Higher income tax rates on taxpayers. Government incurs high fiscal deficit due to decreased value of tax collections.
- On Export and balance of trade: Inflation rate in the economy is higher than rates in other countries; this will increase imports and reduce exports, leading to a deficit in the balance of trade.

#### **Measures to control inflation:**

Effective policies to control inflation need to focus on the underlying causes of inflation in the economy. There are two broad ways in which governments try to control inflation. These are-

#### **1. Fiscal measures.**

#### **2. Monetary measures**



- **Monetary Policy:** Monetary policy can control the growth of demand through an increase in interest rates and a contraction in the real money supply. For example, in the late 1980s, interest rates went up to 15% because of the excessive growth in the economy and contributed to the recession of the early 1990s.
- Monetary measures of controlling the inflation can be either quantitative or qualitative. Bank rate policy, open market operations and variable reserve ratio are the quantitative measures of credit control, by which inflation can be brought down. Qualitative control measures involve selective credit control measures.
- **Bank rate policy** is used as the main instrument of monetary control during the period of inflation. When the central bank raises the bank rate, it is said to have adopted a *dear money policy*. The increase in bank rate increases the cost of borrowing which reduces commercial banks borrowing from the central bank. Consequently, the flow of money from the commercial banks to the public gets reduced. Therefore, inflation is controlled to the extent it is caused by the bank credit.
- **Cash Reserve Ratio (CRR)** : To control inflation, the central bank raises the CRR which reduces the lending capacity of the commercial banks. Consequently, flow of money from commercial banks to public decreases. In the process, it halts the rise in prices to the extent it is caused by banks credits to the public.
- **Open Market Operations:** Open market operations refer to sale and purchase of government securities and bonds by the central bank. To control inflation, central bank sells the government

securities to the public through the banks. This results in transfer of a part of bank deposits to central bank account and reduces credit creation capacity of the commercial banks.

### Lets look into fiscal policy now.

#### Fiscal Policy:

- Higher direct taxes (causing a fall in disposable income).
- Lower Government spending.
- A reduction in the amount the government sector borrows each year .
- Direct wage controls – incomes policies Incomes policies (or direct wage controls) set limits on the rate of growth of wages and have the potential to reduce cost inflation.
- Government can curb its expenditure to bring the inflation in control.
- The government can also take some protectionist measures (such as banning the export of essential items such as pulses, cereals and oils to support the domestic consumption, encourage imports by lowering duties on import items etc.).

#### Effects of Inflation

Inflation has multi-dimensional effects on an economy. Effects of inflation on different sectors and segments is explained below.

##### On Creditors and Debtors

Inflation redistributes wealth from creditors to debtors i.e. lenders suffer and borrowers benefit from inflation. This is true assuming that salaries would also increase due to price rise. This results in repaying the same amount of money with extra money at hand due to wage hike or increase in Dearness Allowance (DA for government employees).

##### On Aggregate Demand

Rising prices usually results in higher demand as it comparatively lower supply. However if inflation results from higher input costs (cost-push), aggregate may demand may or may not increase comparative to price rise.

##### On Investment

Inflation increases the investment in an economy in the short run as it encourages producers to expand or increase production. Also, in the short run, higher the inflation lower is the cost of loan.

##### On Saving

In the short run, rising prices encourages people to deposit cash in hand with banks as money loses value so holding it does not much sense. However in the long run, rising prices depletes the saving rate in an economy.

##### On Exchange Rate

Rising prices generally leads to depreciation of the currency which implies that the currency loses its exchange value in front of a foreign currency. But this is relative to the pressure on the foreign currency against which the exchange rate is compared. For instance, from 2013 till mid-2014, even though there was relatively high inflation in India, still it did not lose much value vis-a-vis the US dollar since the dollar was also under inflationary pressure.

##### On Export

With inflation, exportable items of an economy gain competitive prices in the world market. This boost a country's exports. This happens since value of currency falls so it makes it cheaper for importing countries to buy the exporting countries produce.

**On Imports**

Inflation gives an economy advantage of lower imports and import-substitution as foreign goods become costlier.

**On Wages**

Inflation increases the nominal or face value of the wages while its real value falls. Simply put, even though wages may increase to offset inflation the actual value of money falls

**Inflation at Producer Level**

As of now in India, there is no index to measure inflation at producer level. A Producer Price Index (PPI) is proposed, but so far this type of inflation calculation has not started in India.

**Inflation at Wholesale Level**

This is the most popular inflation rate calculation methodology in India. The index used to calculate wholesale inflation is known as Wholesale Price Index (WPI). This inflation rate is often known as headline inflation. WPI is released by the Ministry of Commerce and Industry.

Though RBI used WPI for most of its policy decisions before 2014. But WPI based inflation calculation was not false proof. WPI shows the combined price of a commodity basket comprising 676 items. But WPI does not include services, and it neither reflect the bottlenecks between producer and wholesaler nor between wholesaler and retailer (consumer).

Hence from 2014, as part of the reforms initiated by **RBI governor Raghu Ram Rajan**, RBI shifted to CPI for policy decisions.

**Inflation at Retail Level (Consumer Level)**

Consumer often directly buys from retailer. So the inflation experienced at retail shops is the actual reflection of the price rise in the country. It also shows the cost of living better.

In India, the index which shows the inflation rate at retail level is known as Consumer Price Index (CPI). CPI is based on 260 commodities, but includes certain services too. There were four Consumer Price Indices covering different socio-economic groups in the economy. These four indices were Consumer Price Index for Industrial Workers (CPI-IW); Consumer Price Index for Agricultural Labourers (CPI-AL); Consumer Price Index for Rural Labourers (CPI -RL) and Consumer Price Index for Urban Non-Manual Employees (CPI-UNME). CPI is now using a new series on the base 2010=100 for all-India and States/UTs separately for rural, urban and combined. The Central Statistics Office (CSO), [Ministry of Statistics and Program Implementation](#) releases Consumer Price Indices (CPI). CPI is based on retail prices and this index is used to calculate the Dearness Allowance (DA) for government employees.

**MONETARY POLICY:**

Monetary policy refers to the credit control measures adopted by the central bank of a country. In case of Indian economy, RBI is the sole monetary authority which decides the supply of money in the economy. The Chakravarty committee has emphasized that price stability, growth, equity, social justice, promoting and nurturing the new monetary and financial institutions have been important objectives of the monetary policy in India.

**Instruments of Monetary Policy**

**The instruments of monetary policy are of two types:**

- 1. Quantitative, general or indirect** (CRR, SLR, Open market operations, bank rate, repo rate, reverse repo rate)
- 2. Qualitative, selective or direct** (change in the margin money, direct action, moral suasion)

These both methods affect the level of aggregate demand through the supply of money, cost of money and availability of credit. Of the two types of instruments, the first category includes bank rate variations, open market operations and changing reserve requirements (cash reserve ratio, statutory reserve ratio). They are meant to regulate the overall level of credit in the economy through commercial banks. The selective credit controls aim at controlling specific types of credit. They include changing margin requirements and regulation of consumer credit.

**We discuss them as under:**

**a. Bank Rate Policy:**

The bank rate is the minimum lending rate of the central bank at which it rediscounts first class bills of exchange and government securities held by the commercial banks. When the central bank finds that inflation has been increasing continuously, it raises the bank rate so borrowing from the central bank becomes costly and commercial banks borrow less money from it (RBI).

The commercial banks, in reaction, raise their lending rates to the business community and borrowers who further borrow less from the commercial banks. There is contraction of credit and prices are checked from rising further. On the contrary, when prices are depressed, the central bank lowers the bank rate. It is cheap to borrow from the central bank on the part of commercial banks. The latter also lower their lending rates. Businessmen are encouraged to borrow more. Investment is encouraged and followed by rise in Output, employment, income and demand and the downward movement of prices is checked.

**b. Open Market Operations:**

Open market operations refer to sale and purchase of securities in the money market by the central bank of the country. When prices start rising and there is need to control them, the central bank sells securities. The reserves of commercial banks are reduced and they are not in a position to lend more to the business community or general public.

Further investment is discouraged and the rise in prices is checked. Contrariwise, when recessionary forces start in the economy, the central bank buys securities. The reserves of commercial banks are raised so they lend more to business community and general public. It further raises Investment, output, employment, income and demand in the economy hence the fall in price is checked.

**c. Changes in Reserve Ratios:**

Under this method, CRR and SLR are two main deposit ratios, which reduce or increases the idle cash balance of the commercial banks. Every bank is required by law to keep a certain percentage of its total deposits in the form of a reserve fund in its vaults and also a certain percentage with the central bank. When prices are rising, the central bank raises the reserve ratio. Banks are required to keep more with the central bank. Their reserves are reduced and they lend less. The volume of investment, output and employment are adversely affected. In the opposite case, when the reserve ratio is lowered, the reserves of commercial banks are raised. They lend more and the economic activity is favourably affected.

**2. Selective Credit Controls:**

Selective credit controls are used to influence specific types of credit for particular purposes. They usually take the form of changing margin requirements to control speculative activities within the economy. When there is brisk speculative activity in the economy or in particular sectors in certain commodities and prices start rising, the central bank raises the margin requirement on them.

**a. Change in Margin Money:**

The result is that the borrowers are given less money in loans against specified securities. For instance, raising the margin requirement to 70% means that the pledger of securities of the value of Rs 10,000 will be given 30% of their value, i.e. Rs 3,000 as loan. In case of recession in a particular sector, the central bank encourages borrowing by lowering margin requirements.

**b. Moral Suasion:** Under this method RBI urges commercial banks to help in controlling the supply of money in the economy.

**Objectives of the Monetary Policy of India**

**1. Price Stability:** Price Stability implies promoting economic development with considerable emphasis on price stability. The centre of focus is to facilitate the environment which is favourable to the architecture that enables the developmental projects to run swiftly while also maintaining reasonable price stability.

**2. Controlled Expansion Of Bank Credit:** One of the important functions of RBI is the controlled expansion of bank credit and money supply with special attention to seasonal requirement for credit without affecting the output.

**3. Promotion of Fixed Investment:** The aim here is to increase the productivity of investment by restraining non essential fixed investment.

**4. Restriction of Inventories:** Overfilling of stocks and products becoming outdated due to excess of stock often results in sickness of the unit. To avoid this problem the central monetary authority carries out this essential function of restricting the inventories. The main objective of this policy is to avoid over-stocking and idle money in the organization

**5. Promotion of Exports and Food Procurement Operations:** Monetary policy pays special attention in order to boost exports and facilitate the trade. It is an independent objective of monetary policy.

**6. Desired Distribution of Credit:** Monetary authority has control over the decisions regarding the allocation of credit to priority sector and small borrowers. This policy decides over the specified percentage of credit that is to be allocated to priority sector and small borrowers.

**7. Equitable Distribution of Credit:** The policy of Reserve Bank aims equitable distribution to all sectors of the economy and all social and economic class of people

**8. To Promote Efficiency:** It is another essential aspect where the central banks pay a lot of attention. It tries to increase the efficiency in the financial system and tries to incorporate structural changes such as deregulating interest rates, ease operational constraints in the credit delivery system, to introduce new money market instruments etc.

**9. Reducing the Rigidity:** RBI tries to bring about the flexibilities in the operations which provide a considerable autonomy. It encourages more competitive environment and diversification. It maintains its

control over financial system whenever and wherever necessary to maintain the discipline and prudence in operations of the financial system.

### **Qualitative Instruments or Selective Tools**

The Qualitative Instruments are also known as the Selective Tools of monetary policy. These tools are not directed towards the quality of credit or the use of the credit. They are used for discriminating between different uses of credit. It can be discrimination favoring export over import or essential over non-essential credit supply. This method can have influence over the lender and borrower of the credit. **The Selective Tools of credit control comprises of following instruments.**

**1. Fixing Margin Requirements:** The margin refers to the “proportion of the loan amount which is not financed by the bank”. Or in other words, it is that part of a loan which a borrower has to raise in order to get finance for his purpose. A change in a margin implies a change in the loan size. This method is used to encourage credit supply for the needy sector and discourage it for other non-necessary sectors. This can be done by increasing margin for the non-necessary sectors and by reducing it for other needy sectors. Example:- If the RBI feels that more credit supply should be allocated to agriculture sector, then it will reduce the margin and even 85-90 percent loan can be given.

**2. Consumer Credit Regulation:** Under this method, consumer credit supply is regulated through hirepurchase and installment sale of consumer goods. Under this method the down payment, installment amount, loan duration, etc is fixed in advance. This can help in checking the credit use and then inflation in a country.

**3. Publicity:** This is yet another method of selective credit control. Through it Central Bank (RBI) publishes various reports stating what is good and what is bad in the system. This published information can help commercial banks to direct credit supply in the desired sectors. Through its weekly and monthly bulletins, the information is made public and banks can use it for attaining goals of monetary policy.

**4. Credit Rationing:** Central Bank fixes credit amount to be granted. Credit is rationed by limiting the amount available for each commercial bank. This method controls even bill rediscounting. For certain purpose, upper limit of credit can be fixed and banks are told to stick to this limit. This can help in lowering banks credit exposure to unwanted sectors.

**5. Moral Suasion:** It implies to pressure exerted by the RBI on the Indian banking system without any strict action for compliance of the rules. It is a suggestion to banks. It helps in restraining credit during inflationary periods. Commercial banks are informed about the expectations of the central bank through a monetary policy. Under moral suasion central banks can issue directives, guidelines and suggestions for commercial banks regarding reducing credit supply for speculative purposes.

**6. Control Through Directives:** Under this method the central bank issue frequent directives to commercial banks. These directives guide commercial banks in framing their lending policy. Through a directive the central bank can influence credit structures, supply of credit to certain limit for a specific purpose. The RBI issues directives to commercial banks for not lending loans to speculative sector such as securities, etc beyond a certain limit.

**7. Direct Action:** Under this method the RBI can impose an action against a bank. If certain banks are not adhering to the RBI's directives, the RBI may refuse to rediscount their bills and securities. Secondly, RBI may refuse credit supply to those banks whose borrowings are in excess to their capital. Central bank can penalize a bank by changing some rates. At last it can even put a ban on a particular bank if it does not follow its directives and work against the objectives of the monetary policy.

### Objectives of Monetary Policy

Before explaining in detail the monetary measures undertaken by RBI to regulate credit and growth of money supply, it is important to explain the objectives of monetary policy pursued by RBI in formulation of its policy. Since monetary policy is one instrument of economic policy, its objectives cannot be different from those of overall economic policy. Monetary policy in an underdeveloped country plays an important role in increasing the growth rate of the economy by influencing the cost and availability of credit, by controlling inflation and maintaining equilibrium in the balance of payments. So the principal objectives of monetary policy in such a country are to control credit for controlling inflation and to stabilise the price level, to stabilise the exchange rate, to achieve equilibrium in the balance of payments and to promote economic development.

#### To Control Inflationary Pressures

To control inflationary pressures arising in the process of development, monetary policy requires the use of both quantitative and qualitative methods of credit control. Of the instruments of monetary policy, the open market operations are not successful in controlling inflation in underdevelopment countries because the bill market is small and undeveloped. Commercial banks keep an elastic cash-deposit ratio because the central bank's control over them is not complete. They are also reluctant to invest in government securities due to their relatively low interest rates. Moreover, instead of investing in government securities, they prefer to keep their reserves in liquid form such as gold, foreign exchange and cash. Commercial banks are also not in the habit of rediscouting or borrowing from the central bank. The bank rate policy is also not so effective in such countries due to:

- (i) the lack of bills of discount;
- (ii) the narrow size of the bill market;
- (iii) a large non-monetised sector where barter transactions take place;
- (iv) the existence of indigenous banks which do not discount bills with the central bank;
- (v) the habit of the commercial banks to keep large cash reserves; and
- vi) the existence of a large unorganized money market. The use of variable reserve ratio as an instrument of monetary policy is more effective than open market operations and bank rate policy in LDCs. Since the market for securities is very small, open market operations are not successful. But a rise or fall in the variable reserve ratio by the central bank reduces or increases the cash available with the commercial banks without affecting adversely the prices of securities. Again, the commercial banks keep large cash reserves which cannot be reduced by an increase in bank rate or sale of securities by the central bank. But raising the cash reserve ratio reduces liquidity with the banks. The use of variable reserve ratio has certain limitations in LDCs. The non-banking financial intermediaries do not keep deposits with the central bank so they are not

affected by it. Second, banks which do not maintain excess liquidity are more affected than those who maintain it. The qualitative credit control measures are, however, more effective than the quantitative measures in influencing the allocation of credit, and thereby the pattern of investment. In LDCs, there is a strong tendency to invest in gold, jewellery, inventories, real estate, etc., instead of in alternative productive changes available in agriculture, mining, plantations and industry. The selective credit controls are more appropriate for controlling and limiting credit facilities for such unproductive purposes. They are beneficial in controlling speculative activities in food grains and raw materials. They prove more useful in controlling 'sectional inflations' in the economy. They curtail the demand for imports by making it obligatory on importers to deposit in advance an amount equal to the value of foreign currency. This has also the effect of reducing the reserves of the banks in so far as their deposits are transferred to the central bank in the process. The selective credit control measures may take the form of changing the margin requirements against certain types of collateral the regulation of consumer credit and the rationing of credit.

### To Achieve Price Stability

Monetary policy is an important instrument for achieving price stability k brings a proper adjustment between the demand for and supply of money. An imbalance between the two will be reflected in the price level. A shortage of money supply will retard growth while an excess of it will lead to inflation. As the economy develops, the demand for money increases due to the gradual monetization of the non-monetized sector, and the increase in agricultural and industrial production. These will lead to increase in the demand for transactions and speculative motives. So the monetary authority will have to raise the money supply more than proportionate to the demand for money in order to avoid inflation.

### To Bridge BOP Deficit

Monetary policy in the form of interest rate policy plays an important role in bridging the balance of payments deficit. Underdeveloped countries develop serious balance of payments difficulties to fulfill the planned targets of development. To establish infrastructure like power, irrigation, transport, etc. and directly productive activities like iron and steel, chemicals, electrical, fertilisers, etc., underdeveloped countries have to import capital equipment, machinery, raw materials, spares and components thereby raising their imports. But exports are almost stagnant. They are high-price due to inflation. As a result, an imbalance is created between imports and exports which lead to disequilibrium in the balance in payments. Monetary policy can help in narrowing the balance of payments deficit through high rate of interest. A high interest rate attracts the inflow of foreign investments and helps in bridging the balance of payments gap.

### Interest Rate Policy

A policy to high interest rate in an underdeveloped country also acts as an incentive to higher savings, develops banking habits and speeds up the monetization of the economy which are essential for capital formation and economic growth. A high interest rate policy is also anti-inflationary in nature, for it discourages borrowing and investment for speculative purposes, and in foreign currencies. Further, it promotes the allocation of scarce capital resources in more productive channels. Certain economists favour a low interest rate policy in such countries because high interest rates discourage investment. But empirical evidence suggests that investment in business and industry is interest-inelastic in underdeveloped countries because interest forms a very low proportion of the total cost of investment. Despite these opposite views, it is advisable for the monetary authority to follow a policy of discriminatory interest rate-charging high interest rates for non-essential and unproductive uses and low interest rates for productive uses.

### To Create Banking and Financial Institutions

One of the objectives of monetary policy in an underdeveloped country is to create and develop banking and financial institutions in order to encourage, mobilise and channelise savings for capital formation. The monetary authority should encourage the establishment of branch banking in rural and urban areas. Such a policy will help in monetizing the non-monetized sector and encourage saving and investment for capital formation. It should also organise and develop money an capital market. These are essential for the success of a development oriented monetary policy which also includes debt management

### Monetary Policy in Pre-reform Era (1948-1991)

Monetary policy in India has to be designed and pursued in the context of planning in the mixed economy' where the main object is to accelerate the process of economic growth with stability and social justice. The Policy Stances: The monetary policy stances during the course of planning in India (1951-1987) may be stated as follows.

1. During the First Five-Year Plan period (1951- 56), the role of monetary policy was confined to the allocation of resources in conformity with the plan objectives. Initially in 1951 to contain inflationary pressures, the RBI raised the bank rate from 3 per cent to 3.5 per cent in November 1951.
2. During the Second Plan period (1956-61), the policy was more or less anti-inflationary. The bank rate was raised further to 4 per cent in May 1957 and the selective credit control scheme was introduced in May 1956.
3. During the period of the Third Plan (1961-66) and Annual Plans (1966-69), the RBI adopted a credit policy of restraint. It raised the bank rate further to 4.5 per cent in January 1963, to 5.0 per cent in October 1964 and again to 6.0 per cent in March 1965.

### **The Credit Authorisation Scheme was introduced.**

In 1964, a system of differential interest rates (DIR) was also introduced. The SLR was raised from 20 per cent to 25 per cent. In 1969, the Government of India nationalised the major commercial banks, thereby bringing nearly 85 per cent of the banking activity in the hands of the public sector.

4. During the Fourth Plan (1969-74) period, the restrictive credit control measures were adopted very sharply. The Net Liquidity Ratio (NLR) was stipulated from 31 per cent to 34 per cent between April 1970 and January 1971. The SLR was enhanced to 30 per cent and NLR further to 37 per cent by March 1973. The Bank rate was raised to 7 per cent and CRR to 5 per cent in May 1973. In September 1973, CRR was raised further to 7 per cent.
5. During the Fifth Plan (1974-79) period, the policy had remained basically anti-inflationary.
6. During the Sixth Plan period (1980-85), efforts have been continuously directed towards containing the inflationary pressures. In 1981-82, the SLR was raised from 34 per cent to 35 per cent. It was further raised to 36 per cent in September 1984 and again to 37 per cent in July 1985. The selective credit controls were rationalised and simplified.

Monetary Policy in Post-Reform Era (since-1991)

The major changes in the Indian Monetary policy during the decade of 1990

**1. Reduced Reserve Requirements:** During 1990s both the Cash Reserve Ratio (CRR) and the Statutory Liquidity Ratio (SLR) were reduced to considerable extent. The CRR was at its highest 15% plus and additional CRR of 10% was levied, however it is now reduced by 4%. The SLR is reduced form 38.5% to a minimum of 25%.

**2. Increased impact of Micro Finance:** In order to strengthen the rural finance the RBI has focused more on the Self Help Group (SHG). It comprises small and marginal farmers, agriculture and non-agriculture labour, artisans and rural sections of the society. However still only 30% of the target population has been benefited.

**3. Fiscal Monetary Separation:** In 1994, the Government and the RBI signed an agreement through which the RBI has stopped financing the deficit in the government budget. Thus it has separated the Monetary policy from the fiscal policy.

**4. Changed Interest Rate Structure:** During the 1990s, the interest rate structure was changed from its earlier administrated rates to the market oriented or liberal rate of interest. Interest rate slabs are now reduced up to 2 and minimum lending rates are abolished. Similarly, lending rates above Rs. Two lakh are freed.

**5. Changes in Accordance to the External Reforms:** During the 1990, the external sector has undergone major changes. It comprises lifting various controls on imports, reduced tariffs, etc. The Monetary policy has shown the impact of liberal inflow of the foreign capital and its implication on domestic money supply.

**6. Higher Market Orientation for Banking:** The banking sector got more autonomy and operational flexibility. More freedom to banks for methods of assessing working funds and other functioning has empowered and assured market orientation. Evaluation of the Monetary Policy in India During the reforms though the Monetary policy has achieved higher success in the Monetary policy, it is not free from limitation or demerits. It needs to be evaluated on a proper scale.

**1. Failed in Tackling Budgetary Deficit:** The higher level of the budget deficit has made the Monetary policy ineffective. The automatic monetization of the deficit has led to high Monetary expansion.

**2. Limited Coverage:** The Monetary policy covers only commercial banking system leaving other non-bank institutions untouched. It limits the effectiveness of the monitor policy in India.

3. Unorganized Money Market: In our country there is a huge size of the unorganized money market. It does not come under the control of the RBI. Thus any tools of the Monetary policy does not affect the unorganized money market making Monetary policy less effective.

4. Predominance of Cash Transaction: In India still there is huge dominance of the cash in total money supply. It is one of the main obstacles in the effective implementation of the Monetary policy. Because Monetary policy operates on the bank credit rather than cash.

**5. Increase Volatility:** As the Monetary policy has adopted changes in accordance to the changes in the external sector in India, it could lead to a high amount of the volatility. Urjit Patel Committee Report on Monetary Policy In January 2014, RBI appointed an expert committee headed by Deputy Governor of RBI, Shri Urjit Patel to examine its current monetary policy framework. The committee made several far reaching recommendations, some of which have been discussed below.

- The most important recommendation of the committee was that the RBI should focus on controlling inflation in the economy or in other words inflation should be the nominal anchor to frame monetary policy. The nominal anchor or the target for inflation should be set at 4 per cent with a band of +/- 2 per cent around it.
- The nominal anchor should be defined in terms of headline CPI inflation, which closely reflects the cost of living and influences inflation expectations relative to other available metrics.
- Historically, Indian policymakers have relied on the wholesale price index
- Given the current elevated level of CPI inflation, it recommended a 12-month target of 8 per cent and 24-month target of 6 per cent, before the inflation target is formally adopted.
- The committee asked the Central Government to ensure that the fiscal deficit as a ratio to GDP (gross domestic product) is brought down to 3.0 per cent by 2016-17.
- The Patel panel felt that the monetary policy decision-making should be vested with a monetary policy committee (MPC).
- It went on to recommend that the Governor of the RBI should be the Chairman of the MPC. It felt that the Deputy Governor in-charge of monetary policy could be the Vice-Chairman. The Executive Director in charge of monetary policy could be its member. It could have two external members.
- The term of office of the MPC could be three years, without prospect of renewal.
- Minutes of the proceedings of the MPC will be released with a lag of two weeks from the date of the meeting.
- Currently, the RBI governor is the sole decision maker on monetary policy, though he is advised by his four deputy governors and a technical advisory committee.
- Concerns regarding Urjit Patel Committee Recommendations
- Experts feel that it is premature to use the Consumer Price Index (CPI) as anchor since the data had imperfections.
- Inflation targeting was done in countries which had more stable kind of pricing. In India, it may be difficult to do that kind of targeting because that level of stability is not yet achieved in the prices where we can curb certain volatilities or volatility in certain periods through a very specific targeting.
- Some experts believe the panel recommendation for adopting monetary policy, which is centered on inflation, will be a shift from traditional policymaking, and will also bring RBI policy calibration closer to the international practices.
- If the RBI accepts the recommendations of the Urjit Patel committee, interest rates are unlikely to come down in 2014-15. Monetary policy Committee and Inflation Targeting On June 27, 2016, the Government amended the RBI Act to hand over the job of monetary policy-making in India to a newly constituted Monetary Policy Committee (MPC). The Monetary Policy Committee (MPC) is a committee of the central bank

— Reserve Bank of India, headed by its Governor. It was set up by amending the RBI Act after the government and RBI agreed to task RBI with the responsibility for price stability and inflation targeting. The Monetary Policy Committee would be entrusted with the task of fixing the benchmark policy rate (repo rate) required to contain inflation within the specified target level. A Committee-based approach for determining the Monetary Policy will add lot of value and transparency to monetary policy decisions. The meetings of the Monetary Policy Committee shall be held at least 4 times a year and it shall publish its decisions after each such meeting. Further government has also signed Inflation targeting mechanism with the RBI. In exercise of the powers conferred by section 45ZA of the Reserve Bank of India Act, 1934, the Central Government, in consultation with RBI, has fixed the inflation target for the period beginning from the date of publication of the Gazette Notification (August 5, 2016) and ending on the March 31, 2021, as under:

1. Inflation Target: Four per cent.
2. Upper tolerance level: Six per cent.

3. Lower tolerance level: Two per cent. The key advantage of a range around a target is that it allows MPC to recognise the short run trade-offs between inflation and growth but enables it to pursue the inflation target in long run over the course of business cycle. The range also accommodates data limitations, projection errors, short-run supply gaps and instability in the agriculture production, an important factor for CPI inflation, as food articles have a major weight in the CPI indices. It also allows to accommodate unanticipated short-term shocks even while nudging public inflation expectations on the centre of the range, to which the monetary policy will return the economy over the medium term, leading to transparency and predictability. Further, if the average inflation is more than the upper tolerance level of 4% + 2%, that is, 6%, or less than the lower tolerance level of 4% - 2%, that is 2%, for any three consecutive quarters, it would mean a failure to achieve the inflation target. Where RBI fails to meet the inflation target, in terms of the provisions of RBI Act, it shall set out a report to the Central Government stating the reasons for failure to achieve the inflation target; remedial actions proposed to be taken by RBI; and an estimate of the time-period within which the inflation target shall be achieved pursuant to timely implementation of proposed remedial actions. Fixation of an inflation target while giving due emphasis to the objective of growth and challenges of an increasingly complex economy, is an important monetary policy reform with necessary statutory back-up.

### **Recent Reforms in Financial Sector**

Financial sector is the mainstay of any economy and it contributes immensely in the mobilisation and distribution of resources. Financial sector reforms have long been viewed as significant part of the program for policy reform in developing nations. Earlier, it was thought that they were expected to increase the efficiency of resource mobilization and allocation in the real economy to generate higher rates of growth. Recently, they are also seen to be critical for macroeconomic stability. It was due to the repercussion of the East Asian crisis, since weaknesses in the financial sector are broadly regarded as one of the major causes of collapse in that region.

The elements of the financial sector are Banks, Financial Institutions, Instruments and markets which mobilise the resources from the surplus sector and channelize the same to the different needy sectors in the economy. The process of accumulative capital growth through institutionalisation of savings and investment fosters economic growth. Reform of the financial sector was recognized, from the very beginning, as an integral part of the economic reforms initiated in 1991. The economic reform process occurred amidst two serious crisis involving the financial sector the balance of payments crisis that endangered the international credibility of the country and pushed it to the edge of default; and the grave threat of insolvency confronting the banking system which had for years concealed its problems with the help of faulty accounting strategies. Furthermore, some deep rooted problems of the Indian economy in the early nineties were also strongly related to the financial sector such as large scale pre-emption of resources from the banking system by the government to finance its fiscal deficit. Excessive structural and micro regulation that inhibited financial innovation and increased transaction costs. Relatively inadequate level of prudential regulation in the financial sector. Poorly developed debt and money markets. And outdated (often primitive) technological and institutional structures that made the capital markets and the rest of the financial system highly inefficient (Mathieu, 1998).

Major aims of the financial sector reforms are to allocate the resources proficiently, increasing the return on investment and hastened growth of the real sectors in the economy. The processes introduced by the

Government of India under the reform process are intended to upturn the operational efficiency of each of the constituent of the financial sector.

**The major delineations of the financial sector reforms in India were found as under:**

- Removal of the erstwhile existing financial repression.
- Creation of an efficient, productive and profitable financial sector.
- Enabling the process of price discovery by the market determination of interest rates that improves allocate efficiency of resources.
- Providing operational and functional autonomy to institutions.
- Preparing the financial system for increasing international competition.
- Opening the external sector in a calibrated manner.
- Promoting financial stability in the wake of domestic and external shocks.

At global level, financial sector reforms have been driven by two apparently contrary forces. The first is a thrust towards liberalization, which seeks to decrease, if not eliminate a number of direct controls over banks and other financial market participants. The second is a thrust in favour of strict regulation of the financial sector. This dual approach is also apparent in the reforms tried in India.

Financial and banking sector reforms are in following areas:  
Financial markets

- Regulators
- The banking system
- Non-banking finance companies
- The capital market
- Mutual funds
- Overall approach to reforms
- Deregulation of banking system
- Capital market developments
- Consolidation imperative

### Regulators

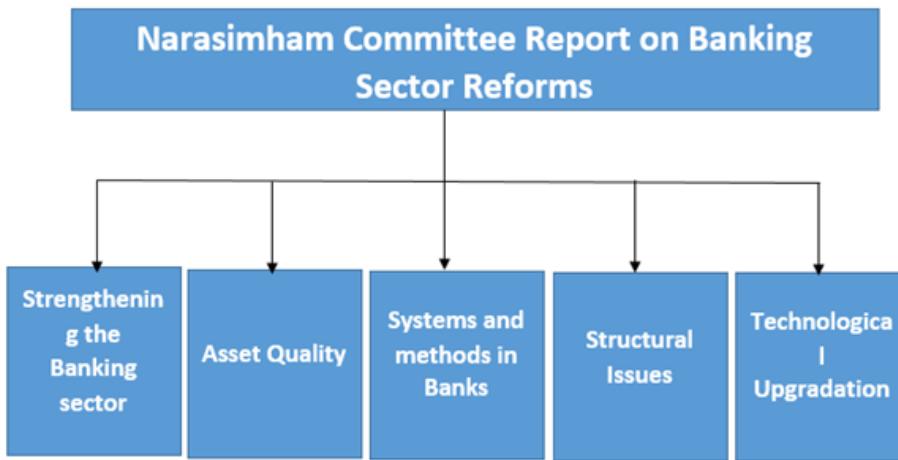
The Finance Ministry constantly formulated major strategies in the field of financial sector of the country. The Government acknowledged the important role of regulators. The Reserve Bank of India (RBI) has become more independent. Securities and Exchange Board of India (SEBI) and the Insurance Regulatory and Development Authority (IRDA) became important institutions. Some opinions are also there that there should be a super-regulator for the financial services sector instead of multiplicity of regulators.

### INDIAN BANKING SECTOR AND FINANCIAL REFORMS

The main intent of banking sector reforms was to uphold a diversified, efficient and competitive financial system with the aim of improving the allocative efficiency of resources through operational flexibility, improved financial viability and institutional solidification.

As early as August 1991, the government selected a high level Committee on the Financial System (the Narasimham Committee) to look into all facets of the financial system and make comprehensive recommendations for improvements. The Committee submitted its report in November 1991, making several recommendations for reforms in the banking sector and also in the capital market. Soon thereafter, the government announced broad acceptance of the approach of the Narasimham Committee and a process of gradualist reform in the banking sector and in the capital market was set in motion, a process that has now

been under way for more than six years.



In India, around 80% of businesses are regulated by public sector banks. PSBs are still governing the commercial banking system. The RBI has given licenses to new private sector banks as part of the liberalization process. The RBI has also been granting licenses to industrial houses. Many banks are effectively running in the retail and consumer segments but are yet to deliver services to industrial finance, retail trade, small business and agricultural finance. Major change observed by individuals is many transformation in policies of the banking sector. The reforms have focussed on eliminating financial repression through reductions in statutory pre-emptions, while stepping up prudential regulations at the same time. Additionally, interest rates on both deposits and lending of banks have been gradually deregulated.

**The major reforms relating to the banking system were:**

- Capital base of the banks were strengthened by recapitalization, public equity issues and subordinated debt.
- Prudential norms were introduced and progressively tightened for income recognition, classification of assets, provisioning of bad debts, marking to market of investments.
- Pre-emption of bank resources by the government was reduced sharply.
- New private sector banks were licensed and branch licensing restrictions were relaxed.

**Similarly, several operational reforms were introduced in the area of credit policy:**

- Detailed regulations relating to Maximum Permissible Bank Finance were abolished.
- Consortium regulations were relaxed substantially.
- Credit delivery was shifted away from cash credit to loan method.

Many reports signified that the initial steps have been taken in the form of allowing new banks to set up shop. Private Corporates, public sector entities and Non-Banking Finance Companies with a strong track record can now apply to set up new banks and the Reserve bank of India will consider these applications in the coming months. The addition of new banks will mean more competition for this sector in the country and it will lead to a development in services for the end customer. It is anticipated to increase financial inclusion as more and more people across the country will be able to access banking facilities. In reforms for the existing banks the public sector banks have been allowed to increase or decrease the authorised capital without the presence of an overall ceiling. This will provide greater flexibility to the banks to conduct their fund raising activities as per the requirements. The strict restriction of voting rights in banks will also be relaxed and this will aid the banking sector to develop, as large investors will be able to get a bigger voice in the coming days in the banks and the manner in which they operate.

When evaluating banking sector reform, it can be identified that banks have experienced strong balance sheet growth in the post-reform period in an environment of operational flexibility. Enhancement in the financial health of banks, reflected in noteworthy improvement in capital adequacy and improved asset quality, is distinctly observable. It is striking that this progress has been realised despite the espousal of international best practices in prudential norms. Competitiveness and productivity gains have also been enabled by proactive technological deepening and flexible human resource management. These significant gains have been achieved even while renewing goals of social banking viz. maintaining the wide reach of the banking system and directing credit towards important but underprivileged sectors of civilisation.

#### **Forex market reform:**

Forex market reform took place in 1993 and the successive adoption of current account convertibility were the acmes of the forex reforms introduced in the Indian market. Under these reforms, authorised dealers of foreign exchange as well as banks have been given greater sovereignty to perform in activities and numerous operations. Additionally, the entry of new companies have been allowed in the market. The capital account has become effectively adaptable for non-residents but still has some reservations for residents.

#### **Impact on the Reform Measures**

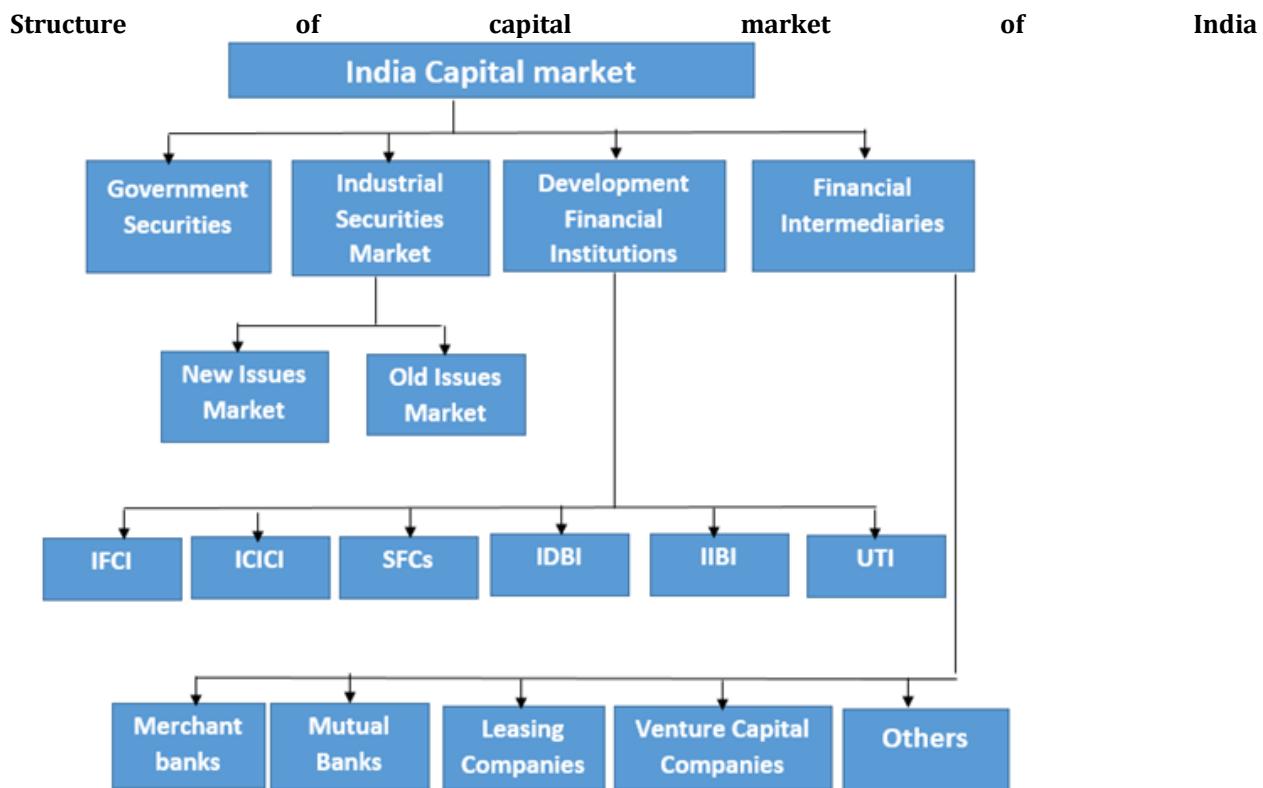
The broader objectives of the financial sector reform process are to articulate the policy to enhance the financial condition and to reinforce the institutions. As part of the reforms process, many private banks were granted licence to operate in India. This has resulted into a competitive environment in the banking industry which in turn has assisted in using the resources more competently. Conventionally, the industrial units were sanctioned term loan by the development banks and working capital by the commercial banks. The reform process has transformed the pattern of financing and now both the institutions are willing to extend long term loan as well as working capital loan. But there is some difference in the mode of operation. This has empowered the industrial units to avail credit facilities from a single institution. Despite the fact that the banks provide both the term loan and the working capital loans, the industrial units prefer the development banks for the following reasons.

It provides equal support to the new as well as existing industries.

The period of repayment of loan is comparatively longer. Besides providing financial backing, it acts as the implementing agency for the different government sponsored schemes. Hence the industrial units can avail of both the financial assistance as well as the incentives offered under various development schemes through a Single Window System. As lending is the main activity of these institutions, it acquires specialisation in this field and can share its expertise with the industrial units.

#### **Capital Market Reform**

Capital market is defined as a financial market that works as a channel for demand and supply of debt and equity capital. It channels the money provided by savers and depository institutions (banks, credit unions, insurance companies, etc.) to borrowers and investees through a variety of financial instruments (bonds, notes, shares) called securities. A capital market is not a compact unit, but a highly decentralized system made up of three major parts that include stock market, bond market, and money market. It also works as an exchange for trading existing claims on capital in the form of shares. The Capital Market deals in the long-term capital Securities such as Equity or Debt offered by the private business companies and also governmental undertakings of India.



In the agenda of financial sector reforms, Improvement of the capital market is important area and action has been taken parallel with reforms in banking. India has experienced functioning in capital markets the Bombay Stock Exchange (BSE) for over a hundred years but until the 1980s, the volume of activity in the capital market was relatively limited. Capital market activity extended rapidly in the 1980s and the market capitalization of companies registered in the BSE rose from 5 per cent of GDP in 1980 to 13 per cent in 1990. It is observed that the Indian capital market has perceived major reforms in the decade of 1990s and thereafter. It is on the edge of the growth. Thus, the Government of India and SEBI took numerous measures in order to improve the working of the Indian stock exchanges and to make it more progressive and energetic. The Securities and Exchange Board of India (SEBI) was well-known in 1988. It got a legal status in 1992. SEBI was principally set up to control the activities of the commercial banks, to control the operations of mutual funds, to work as a promoter of the stock exchange activities and to act as a regulatory authority of new issue activities of companies. The SEBI was established with the vital objective, "to protect the interest of investors in securities market and for matters connected therewith or incidental thereto." The main functions of SEBI are as follows:

- **To control the business of the stock market and other securities market.**
- **To promote and regulate the self-regulatory organizations.**
- **To forbid fraudulent and unfair trade practices in securities market.**
- **To promote awareness among investors and training of intermediaries about safety of market.**
- **To prohibit insider trading in securities market.**
- **To regulate huge acquisition of shares and takeover of companies.**

However the stock market remained primeval and poorly controlled. Companies who want to access the capital market needed prior permission of the government which also had to approve the price at which new equity could be raised. While new issues were strictly controlled, there was insufficient regulation of stock market activity and also of various market participants including stock exchanges, brokers, mutual funds, etc. The domestic-capital market was also closed to portfolio investment from abroad except through a few closed ended mutual funds floated abroad by the Unit Trust of India (UTI) which were committed to Indian investment.

The practice of reform of the capital market was started in 1992 along the lines recommended by the Narasimham Committee. It was intended to remove direct government control and replacing it by a regulatory framework based on transparency and disclosure supervised by an independent regulator. The first step was taken in 1992 when the Securities and Exchange Board of India (SEBI), which was initially established as a non-statutory body in 1988, was raised to a complete capital market regulator with statutory powers in 1992. The requirement of prior government permission for accessing capital markets and for prior approval of issue pricing was stopped and companies were permissible to access markets and price issues freely, subject only to disclosure norms laid down by SEBI.

### **The Regulatory Framework**

As the time passed, SEBI has implemented a modern regulatory framework with rules and regulations to control the behaviour of major market participants such as stock exchanges, brokers, merchant bankers, and mutual funds. It has also sought to control activities such as takeovers and insider trading which have implications for investor protection. The governing structure of stock exchanges has been changed to make the boards, of the exchanges more broad based and less dominated by brokers. The new regulatory framework intended to support investor protection by ensuring disclosure and transparency rather than through direct control. SEBI acts as a supervisor of the system undertaking supervision of the activities of various participants including stock exchanges and mutual funds and violations of the rules are punishable by SEBI.

The regulatory framework is new and there is a need to be advanced with experience gained and also as gaps and insufficiencies are identified. SEBI needs to be further strengthened in some areas and its disciplinary powers.

### **Opening the Capital Market to Foreign Investors**

Significant policy initiative in 1993 was the opening of the capital market to foreign institutional investors (FIIs) and allowing Indian companies to raise capital abroad by issue of equity in the form of global depository receipts (GDRs).

### **Modernization of Trading and Settlement Systems**

Major developments occurred in trading methods which were highly antiquated earlier. The National Stock Exchange (NSE) was established in 1994 as an automated electronic exchange. It empowered brokers in 220 cities all over the country to link up with the NSE computers via VSATs and trade in a unified exchange with automatic matching of buy and sell orders with price time priority, thus ensuring maximum transparency for investors. The initiation of electronic trading by the NSE generated competitive pressure which forced the BSE to also introduce electronic trading in 1995.

The settlement system was old-fashioned which involved physical delivery of share certificates to the buyer who then had to deliver them to a company registrar to record change of ownership after which the certificates had to be returned to the buyer. This process was consuming and also had significant risks for investors. The first step towards paperless trading was put in place by enacting legislation which allowed dematerialization of share certificates with settlement by electronic transfer of ownership from one account to another within a depository. The National Securities Depository Ltd (NSDL) opened for business in 1996.

### **Futures Trading**

Currently, an important gap in India's capital market is future markets. Good market in index futures would help in risk management and provide greater liquidity to the market. A decision to present futures trading has been taken and the legislative changes needed to implement this decision have been submitted to parliament.

### **Several Problems in the Capital Market**

Though, there are numerous reforms made in the regulatory framework and trading and settlement systems, the functioning of the capital market in the post-reform period has been heavily criticized. Investors, particularly small investors who entered the market in the early stages of liberalization, did not get good value of their investments. It was perceived that many dishonest companies took advantage of the exclusion of government control over issue prices to raise capital at inflated prices, at the expense of inexperienced investors. Merchant bankers and underwriters involved in these issues.

Issuers of capital must also understand that the capital market should not be viewed, as a passive source of equity capital which can be tapped by companies at will to raise equity on favourable terms. Cross-country studies have revealed that stock markets in developing countries have been an important source for financing of new investments through IPOs than in developed countries where financing of new investment has relied

mainly on internal generation of surpluses. New companies raising funds have typically relied on venture capital or private placement rather than public issues.

### **Mutual Funds**

Presently, the mutual funds industry is controlled under the SEBI (Mutual Funds) Regulations, 1996 and amendments thereto. With the issuance of SEBI rules, the industry had a framework for the setting up of many more companies, both Indian and foreign firms. The Unit Trust of India is biggest mutual fund controlling a quantity of nearly Rs.70,000 crores, but its share is going down. With the growth in the securities markets and tax advantages granted for investment in mutual fund units, mutual funds became widespread. The foreign owned AMCs are the ones which are now setting the pace for the industry. They are introducing new products, setting new standards of customer service, improving disclosure standards and experimenting with new types of distribution.

### **Reform of the Insurance Sector**

The Insurance sector in India directed by Insurance Act, 1938, the Life Insurance Corporation Act, 1956 and General Insurance Business (Nationalisation) Act, 1972, Insurance Regulatory and Development Authority (IRDA) Act, 1999 and other related Acts. The basis of liberalizing the banking system and encouraging competition among the three major participants' viz. public sector banks, Indian private sector banks, and foreign banks, applies equally to insurance. There is a strong case for ending the public sector monopoly in insurance and opening it up to private sector participants subject to suitable prudential regulation.

Cross-country data advocates that contractual savings institutions are highly significant determinant of the aggregate rate of savings and insurance and pension schemes are the most important form of contractual savings in this reference. A competitive insurance industry providing diversified insurance products to fulfil differing customer needs, can help increase savings in this situation and allocate them efficiently. The insurance and pensions industry has long-term liabilities which it seeks to match by investing in long-term secure assets. A healthy insurance is an important source of long-term capital in domestic currency which is especially for infrastructure financing. Improvements in insurance will strengthen the capital market at the long-term end by adding new companies in this section of the market, giving it greater depth or liquidity. Reforms in insurance are likely to create a flow of finance for the corporate sector if people can simultaneously make progress in reducing financial deficit.

**The Malhotra Committee** had suggested opening up the insurance sector to new private companies as early as 1994. It took five years to build an agreement on this issue and legislation to open up insurance, allowing foreign equity up to 26 per cent was finally submitted to Parliament in 1999.

### **Overall Approach to Reforms**

It is assessed that since last many years, there have seen major improvements in the working of various financial market contributors. The government and the regulatory authorities have followed a step-by-step approach. The entry of foreign companies has helped in the start of international practices and systems. Technology developments have enhanced customer service. Some gaps however remain such as lack of an inter-bank interest rate benchmark, an active corporate debt market and a developed derivatives market. In general, the cumulative effect of the developments since 1991 has been quite encouraging. An indication of the strength of the reformed Indian financial system can be seen from the way India was not affected by the Southeast Asian crisis.

To summarize, the financial sector is main element of the Indian economic system. Financial experts suggested that there is a need for effective reforms to ensure that this remains competitive and attractive for investors from across the world. The economic reforms have preferred the need for changing the policy objective to promotion of industries and the formation of more integrated infrastructural facilities. Financial sector reforms are centre point of the economic liberalization that was introduced in India in mid-1991. It was witnessed that national financial liberalisation has brought about the deregulation of interest rates, dismantling of directed credit, improving the banking system, enhancing the functioning of the capital market that include the government securities market. Regulators and economic experts put more emphasis on banking reforms to enhance economy and enable people to access numerous facilities. Fundamental objective of financial sector reforms in the 1990s was to create an effectual, competitive and steady that could contribute in greater measure to inspire progression.

The word public refers to general people and the word finance means resources. So Public Finance means resources of the masses, how they are collected and utilized. Thus, it is the branch of economics that studies the taxing and spending activities of government. It is that branch of general economics which deals with the financial activities of the state or government at national, state and local levels. The discipline of public finance describes and analyses government services, subsidies and welfare payments, and the methods by which the expenditures to these ends are covered through taxation, borrowing, foreign aid and the creation of money.

It was Adam Smith who gave a detailed account of the problems of 'public finance' and recognized the close connection between science of finance and the theory of economics. Following Smith, other classical economists went on writing on one issue or the other in the field of 'public finance'.

### **Nature**

Nature of public finance implies whether it is a science or art or both.

#### **Public Finance as Science**

Science is the systematic study of any subject which studies relationship between facts. Public finance has been held as science which deals with the income and expenditure of the government's finance. It studies the relationship between facts relating to revenue and expenditure of the government.

#### **Arguments in support of Public Finance as Science:**

It is systematic study of the facts and principles relating to government expenditure and revenue.

Principles of Public finance are empirical.

It is studied by the use of scientific methods.

It is concerned with definite and limited field of human knowledge.

#### **Public Finance as Art**

Art is application of knowledge for achieving definite objectives. Fiscal Policy which is an important instrument of public finance makes use of the knowledge of government's revenue and expenditure to achieve the objectives of full employment, economic development and equality. Price stability etc. To achieve the goal of economic equality taxes are levied which are likely to be opposed. Therefore it is important to plan their timing and volume. The process of levying tax is therefore an art. Study of Public finance is helpful in solving many practical problems. Public finance is therefore an art also.

From the above discussion it can be concluded that public finance is both science and art. It is positive science as well as normative science.

It is a positive science as by the study of public finance factual information about the problems of government's revenue and expenditure can be known. It also offers suggestions in this respect.

It is also normative science as study of public finance presents norms or standards of the government's financial operations . It reveals what should be the quantum of taxes, kind of taxes and on what items less of public expenditure can be incurred.

### **Scope**

Public finance not only includes the income and expenditure of the government but also the sources of income and the way of expenditure of various government corporations, public companies and quasi government ventures. Thus the scope of public finance extends to the study of independent bodies acting under the government's direct and indirect control. The Scope of public finance includes:

#### **Public Revenue**

Public finance deals with all those sources or methods through which a government earns revenue. It studies the principles of taxation, methods of raising revenue, classification of revenue, deficit financing etc.

### **Public Expenditure**

Public expenditure studies how the government distributes the resources for the fulfillment of various expenses. It also studies principles that the government should keep in view while allocating resources to various sectors and effects of such expenditure.

### **Public debt**

It deals with borrowing by the government from internal and external sources. At any time government may exceed its revenue. To meet the deficit, government raises loans. The study of public finance focuses on the problems of raising loans and the methods of repayment of loans.

### **Financial/Fiscal administration**

The scope of financial administration is wider. It covers all the financial functions of the government. It includes drafting and sanctioning of the budget, auditing of the budget, etc. Financial administration is concerned with the organization and functioning of the government machinery responsible for performing the various financial functions of the state. The budget is the master financial plan of the government.

### **Economic Stabilization and Growth**

In the present times, public finance is mainly concerned with the economic stability and other related problems of a country. For the attainment of these objectives, the government formulates its fiscal policy comprising of various fiscal instruments directed towards the economic stability of the nation.

### **Federal Finance**

Distribution of the sources of income and expenditure between the central and the state governments in the federal system of government is also studied as the subject matter of the public finance. This branch of public finance is popularly known as Federal Finance.

It is a positive science as by the study of public finance factual information about the problems of government's revenue and expenditure can be known. It also offers suggestions in this respect.

It is also normative science as study of public finance presents norms or standards of the government's financial operations. It reveals what should be the quantum of taxes, kind of taxes and on what items less of public expenditure can be incurred.

### **Revenue Expenditure and Capital Expenditure**

An expenditure that neither creates assets nor reduces a liability is categorised as revenue expenditure. If it creates an asset or reduces a liability, it is categorised as capital expenditure.

This is the basis of classification between revenue expenditure and capital expenditure.

#### **(a) Revenue Expenditure:**

Simply put, an expenditure which neither creates assets nor reduces liability is called Revenue Expenditure, e.g., salaries of employees, interest payment on past debt, subsidies, pension, etc. These are financed out of revenue receipts. Broadly, any expenditure which does not lead to any creation of assets or reduction in liability is treated as revenue expenditure.

Generally, expenditure incurred on normal running of the government departments and maintenance of services is treated as revenue expenditure. Examples of revenue expenditure are salaries of government employees, interest payment on loans taken by the government, pensions, subsidies, grants, rural development, education and health services, etc.

It is a short period expenditure and recurring in nature which is incurred every year (as against capital expenditure which is long period expenditure and non-recurring in nature). The purpose of such expenditure is not to build up any capital asset, but to ensure normal functioning of government machinery. Traditionally, all grants given to state governments are treated as revenue expenditure even though some of the grants may before creation of assets.

### (b) Capital Expenditure:

An expenditure which either creates an asset (e.g., school building) or reduces liability (e.g., repayment of loan) is called capital expenditure.

(A) Capital expenditure which leads to creation of assets are (a) expenditure on purchase of land, buildings, machinery, (b) investment in shares, loans by Central government to state government, foreign governments and government companies, cash in hand and (c) acquisition of valuables. Such expenditures are incurred on long period development programmes, real capital assets and financial assets. This type of expenditure adds to the capital stock of the economy and raises its capacity to produce more in future.

(B) Repayment of loan is also capital expenditure because it reduces liability. These expenditures are met out of capital receipts of the government including capital transfers from rest of the world.

### Comparison between Revenue Expenditure and Capital Expenditure

Revenue Expenditure	Capital Expenditure
1. It is incurred for normal running of government departments and maintenance.	1. It is incurred for acquisition of capital assets.
2. It does not result in creation of assets.	2. It results in creation of assets.
3. It is recurring in nature and incurred regularly.	2. It is non-recurring in nature.
4. It is short period expenditure.	4. It is generally a long period expenditure.
5. For example, expenditure on medicines and salaries of doctors for rendering services is	5. For example, construction of a hospital building is capital expenditure.

### Sources of revenue and expenditure of Government of India

As we all know that India is a democratic country and the main aim of the government here is to increase the welfare of the people not the profit of the government. To increase the welfare of the people the Government of India has to start welfare oriented schemes. Welfare oriented schemes are not guaranteed by the good return to the Government. This is the sole reason behind the increasing fiscal deficit of the Government.

The Government has set up a target to keep fiscal deficit at 3.2% of G.D.P. in the budget of 2017-18, whereas in the financial year 2018-19 it has been targeted to reduce to 3% of the G.D.P. In this article, we mentioned the facts that how Government of India earns and spends money.

### The sources of income (budget 2017-18) of the government are as follows: (in terms of paisa)

1. Borrowing and other Liabilities ..... 19 paisa

2. Corporate Tax (Company Tax) ..... 19 paisa
3. Income Tax ..... 16 paisa
4. Union Excise Duties ..... 14 paisa
5. Service Tax and Other Taxes ..... 10 paisa
6. Non-Tax Revenue ..... 10 paisa
7. Custom Duties ..... 9 paisa
8. Non-Debt Capital Receipts ..... 3 paisa

**Note:** Here it is to be noted that "borrowings and other liabilities" have been shown as government's income whereas this is a kind of liabilities on the government of India which has to be repaid by the government with interest after some years. In the above list we can see that the net income of the government is 81 paisa whereas income received from borrowing and other liabilities is 19 paisa.

**The sources of expenditure (budget 2017-18) of the government are as follows: (in terms of paisa)**

1. The share of states in taxes and fees ... 24 paisa
2. Interest payment ... 18 paisa
3. Other expenses ... 13 paisa
4. Expenditure on centralized schemes ... 11 paisa
5. Subsidies ... 10 paisa
6. Centrally sponsored schemes ... 10 paisa
7. Defence expenditure ... 9 paisa
8. Finance Commission and other transfers ... 5 paisa

**Note:** "Expenditure on Centralized Schemes" is that Expenditure which is fully funded by the central government whereas in the case of "Centrally Sponsored Schemes", the State government also provides financial assistance (which may be shared on the basis of 50:50 or 60:40).

So from the above figures it can be concluded that the government has two main items of expenditure & revenue respectively, "financial assistance given to the state government "on the basis of recommendations of the Finance Commission and "Loan" taken by the central government.

### Public Debt: Meaning, Objectives and Problems!

#### Meaning:

In India, public debt refers to a part of the total borrowings by the Union Government which includes such items as market loans, special bearer bonds, treasury bills and special loans and securities issued by the Reserve Bank. It also includes the outstanding external debt.

However, it does not include the following items of borrowings:

- (i) small savings,
- (ii) provident funds,

(iii) other accounts, reserve funds and deposits.

The aggregate borrowings by the Union Government—comprising the public debt and these other borrowings — are generally known as ‘net liabilities of the Government’.

### **Objectives:**

In India, most government debt is held in long-term interest bearing securities such as national savings certificates, rural development bonds, capital development bonds, etc. In industrially advanced countries like the U.S.A., the term government or public debt refers to the accumulated amount of what government has borrowed to finance past deficits.

In such countries the government debt has a very simple relationship to the government deficit the increase in debt over a period (say one year) is equal to its current budgetary deficit. But, in India, the term is used in a different sense.

The State generally borrows from the people to meet three kinds of expenditure:

- (a) to meet budget deficit,
- (b) to meet the expenses of war and other extraordinary situations and
- (c) to finance development activity.

#### **(a) Public Debt to Meet Budget Deficit:**

It is not always proper to effect a change in the tax system whenever the public expenditure exceeds the public revenue. It is to be seen whether the transaction is casual or regular. If the budget deficit is casual, then it is proper to raise loans to meet the deficit. But if the deficit happens to be a regular feature every year, then the proper course for the State would be to raise further revenue by taxation or reduce its expenditure.

#### **(b) Public Debt to Meet Emergencies like War:**

In many countries, the existing public debt is, to a great extent, on account of war expenses. Especially after World War II, this type of public debt had considerably increased. A large portion of public debt in India has been incurred to defray the expenses of the last war.

#### **(c) Public Debt for Development Purposes:**

During British rule in India public debt had to be raised to construct railways, irrigation projects and other works. In the post-independence era, the government borrows from the public to meet the costs of development work under the Five Year Plans and other projects. As a result the volume of public debt is increasing day by day.

### **The Burden of Public Debt:**

When a country borrows money from other countries (or foreigners) an external debt is created. It owes its all to others. When a country borrows money from others it has to pay interest on such debt along with the principal. This payment is to be made in foreign exchange (or in gold). If the debtor nation does not have sufficient stock of foreign exchange (accumulated in the past) it will be forced to export its goods to the creditor nation. To be able to export goods a debtor nation has to generate sufficient exportable surplus by curtailing its domestic consumption.

Thus an external debt reduces society’s consumption possibilities since it involves a net subtraction from the resources available to people in the debtor nation to meet their current consumption needs. In the 1990s, many developing countries such as Poland, Brazil, and Mexico faced severe economic hardships after incurring large external debt. They were forced to curtail domestic consumption to be able to generate export surplus (i.e., export more than they imported) in order to service their external debts, i.e., to pay the interest and principal on their past borrowings.

The burden of external debt is measured by the debt-service ratio which returns to a country's repayment obligations of principal and interest for a particular year on its external debt as a percentage of its exports of goods and services (i.e., its current receipt) in that year. In India it was 24% in 1999. An external debt imposes a burden on society because it represents a reduction in the consumption possibilities of a nation. It causes an inward shift of the society's production possibilities curve.

### **Three Problems:**

When we shift attention from external to internal debt we observe that the story is different.

**It creates three problems:**

- (1) Distorting effects on incentives due to extra tax burden,
- (2) Diversion of society's limited capital from the productive private sector to unproductive capital sector, and
- (3) Slowing the rate of growth of the economy.

**These three problems may now be briefly discussed:**

#### **1. Efficiency and Welfare Losses from Taxation:**

When the government borrows money from its own citizens, it has to pay interest on such debt. Interest is paid by imposing tax on people. If people are required to pay more taxes simply because the government has to pay interest on debt, there is likely to be adverse effects on incentives to work and to save. It may be a happy coincidence if the same individual were tax-payer and a bond-holder at the same time.

But even in this case one cannot avoid the distorting effects on incentives that are inescapably present in the case of any taxes. If the government imposes additional tax on Mr. X to pay him interest, he might work less and save less. Either of the outcome — or both — must be reckoned a distortion from efficiency and well-being. Moreover, if most bond-holders are rich people and most tax-payers are people of modest means repaying the debt money redistributes income (welfare) from the poor to the rich.

#### **2. Capital Displacement (Crowding-Out) Effect:**

Secondly, if the government borrows money from the people by selling bonds, there is diversion of society's limited capital from the productive private to unproductive public sector. The shortage of capital in the private sector will push up the rate of interest.

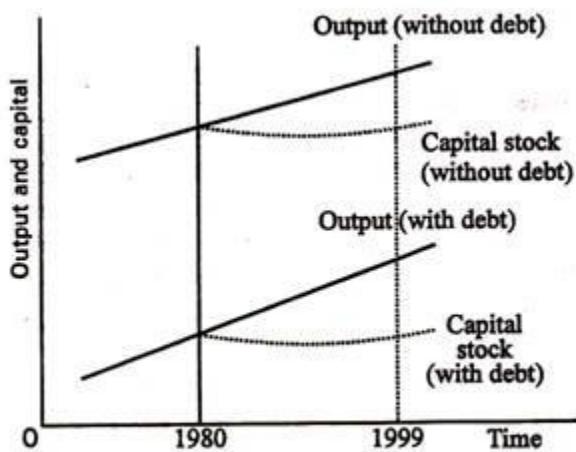
In fact, while selling bonds, the government competes for borrowed funds in financial markets, driving up interest rates for all borrowers. With the large deficits of recent years, many economists have been concerned in the competition for funds; also higher interest rates have discouraged borrowing for private investment, an effect known as crowding out.

This, in its turn, will lead to fall in the rate of growth of the economy. So, decline in living standards is inevitable. This seems to be the most serious consequence of a large public debt. As Paul Samuelson has put it: "Perhaps the most serious consequence of a large public debt is that it displaces capital from the nation's Stock of wealth. As a result, the pace of economic growth slows and future living standards will decline."

#### **3. Public Debt and Growth:**

By diverting society's limited capital from productive private to unproductive public sector public debt acts as a growth-retarding factor. Thus an economy grows much faster without public debt than with debt.

When we consider all the effects of government debt on the economy, we observe that a large public debt can be detrimental to long-run economic growth. Fig. 22.3 shows the relation between growth and debt. Let us suppose an economy were to operate over time with no debt, in which case the capital stock and potential output would follow the hypothetical path indicated by the solid lines in the diagram.



**Fig. 22.3. Public Debt, Capital Formation and Growth**

Now suppose the government increase a huge deficit and debt; with the accumulation of debt over time, more and more capital is displaced, as shown by the dashed capital line in the bottom of Fig. 22.3. As the government imposes additional taxes on people to pay interest on debt, there are greater inefficiencies and distortions — which reduce output further.

What is more serious is that an increase in external debt lowers national income and raises the proportion of GNP that has to be set aside every year for servicing the external debt. If we now consider all the effects of public debt together, we see that output and consumption will grow more slowly than in the absence of large government debt and deficit as is shown by comparing the top lines in Fig. 22.3.

This seems to be the most important point about the long-run impact of huge amount of public debt on economic growth. To conclude with Paul Samuelson and W. D. Nordhaus: "A large government debt tends to reduce a nation's growth in potential output because it displaces private capital, increases the inefficiency from taxation, and forces a nation to service the external portion of the debt."

#### **Conclusion:**

There is no doubt a feeling among some people that interest payment on the national debt repayment is a drain on the nation's limited economic resources. It is pure waste of our resources to use them to pay interest on the debt.

This argument is wrong because interest payment on the debt — if domestically held — do not prevent a use of economic resources at all. It is, of course, true that if our debt is held by foreigners, we will suffer a loss of resources.

In the case of domestically held (internal) debt, internal payment on the debt involves a transfer of income from Indian taxpayers to Indian bondholders of the same generation. Since, in most cases, taxpayers and bond-holders are different entities, a large national debt inevitably involves income redistribution effects. But internal debt does not involve any using up of the nation's real economic resources.

#### **Limit to Public Debt:**

Though there is no clear end limit to internal debt there should be a definite limit to external debt. Moreover the upper limit to internal debt should be set by the annual rate of growth of per capita GNP

Points to remember	For quick revision
<p><b>The costs of the public debt include :</b></p> <ol style="list-style-type: none"> <li>1. The private sector output given up at the time the debt was incurred.</li> <li>2. Lack of constraint on growth of the public sector.</li> <li>3. Higher interest rates, discouraging private investment.</li> <li>4. Externally held debt that must be repaid.</li> <li>5. Problems of income redistribution when the debt is repaid.</li> </ol>	

### Assessing the Debt (Optional):

What kind of burden does the national debt impose on taxpayers and on future generations?

One of the most obvious and significant burdens of the national debt is the interest that must be paid to borrow and maintain a debt of this magnitude. The interest burden of the national debt cumulates as additional debt is incurred each year. Because the debt is not being retired, interest must be paid year after year.

The rising burden of the debt service — or interest cost of maintaining the debt — will be passed on to future generations who will have to pay the interest on the current debt. At the same time, however, many of those to whom interest will be paid will be Indian citizens who own government securities.

Should we pay off the debt? First of all, it would be a huge, probably impossible, burden, even over several years, to raise, through taxes and other revenues, the amount needed to pay off the debt. Second, with repayment of the debt, a significant income redistribution would occur as the average taxpayer became poorer due to the increased tax burden and the holders of government securities became richer with their newly redeemed funds.

Also, some portion of the debt is external, or foreign-owned. While, under normal conditions, this is not a serious concern, in a period of accelerated repayment it would mean a sizable outflow of rupees from the India. Finally, in order to pay off the public debt, a series of surplus budgets would be needed.

However, as Keynes pointed out, a surplus budget has a contractionary impact on the economy. While the debt was being paid off, economic activity would decline. In short, the opportunity cost of lowering the national debt would be a slowing down of the economic activities.

### Poverty in India

#### Meaning

Poverty means that people who are situated by deprived of basic necessities of life. Those people not have basic needs like food, cloth, and shelter i.e. poverty. There is lack of essential needs in life for subsistence in all state privation.

Most of the people are not getting essential needs and them also not getting two meals a day. In India, one of the largest poverty place of countries. There are so much people are poor in India. They are not getting the proper house for live and his children are not getting the proper schooling.

Over the 65th year of our independence day, there are so much poverty in India. Some poor people become so depressed and deprived class just because they have not proper food and nutrition. In India, their poor people condition is not sufficiently improved.

### **Urban poverty in India**

Most of the people are living in the urban area because of the poverty. The most growing and developing countries. But there is day by day population is increasing. Urban population has so much poverty.

Poor people migrate from rural areas to cities and towns in search of employment/financial activity.

In addition to this, there are around 4.5 crore urban people whose income level is on borderline of the poverty line.

The revenue of more than eight crore urban people is estimated to fall below poverty line (BPL).

Banks and Financial institutions are reluctant to provide them the loan because of the unstable income.

An income of urban poor is highly unstable. A large number of them are either casual workers or self-employed.

Five states that constitute around 40% of all urban poor people of India are Uttar Pradesh, Bihar, Rajasthan, Odisha, and Madhya Pradesh.

A large portion of people living in slums is illiterate.

Around 35% of the total population of the four metro cities (Delhi, Kolkata, Chennai and Mumbai) consists of slum population.

The initiatives taken to deal with the problem of urban poverty has not yielded the desired results.

### **Rural poverty in India**

Rural India is a heart of India, but in reality the rural people also not satisfied with his place. In rural India, there is severe poverty and people are living in rural area. The condition of poor people is far from satisfactory. The report on Socio-Economic and Caste census is follows that:

There are 18.46% people are belongs to scheduled cast and around 10.97% belongs to schedule tribes. It is the all rural households to become a Schedule cast and scheduled tribes.

Manual causal labor jobs and cultivation are the primary sources of income for rural people. Nearly 51 percent of all households are economically engaged in casual manual labour, and nearly 30 percent of them are involved in cultivation.

According to the census, there are around 48.5% of rural households are deprived.

Around 29.69% rural families have much of the vehicles included the (Two wheelers, Boat, etc.). There are some families are using his refrigerator while they have all vehicles.

In rural India, some of the people are paying tax, such as 4.58% rural households are paying tax.

Most of the people have his land in the rural area, but around 56% of the people have not any land for his homes.

The houses of around 54 percent rural families consist of either one or two-rooms. Out of them, around 13 percent lives in a one-room house.

### **Causes of poverty**

Poverty makes the unequal distribution of wealth. At the growing population inflates the problem of poor techniques. There are rich person are exploiting to the poor people for increase his own wealth. This is resulted in India; the poverty main reason is rising populations, vast gap between rich and poor, corruption and black money. This all activity effects to the India and it became poverty.

### **Lack of facilitate agriculture**

The poverty of India is mainly depending upon the agriculture but this is not doing well in this country. There are 80% of the people are depend on the agriculture. But our agriculture is in a bad way. Farmers are poor

and uneducated. They do not know the modern methods of farming. They have no real facilities of irrigation. They do not get seeds and fertilizers in time. Thus, the yield reduced. Agriculture is not profitable today. We face the shortage of food. We have to import it. So, poor agriculture is one of the causes of India's poverty.

### **Increase population**

In our country the population is growing rapidly. But whatever resources are not available here for growing population. There is shortage of everything. The growth in population creates problems for us. Today, our population is 1.20 billion; tomorrow we will be 1.21 billion and so on. We need more food, more houses, and more hospitals for them. So we have no money to spend on development projects. The ever-growing rate of population must be checked. If not, we may not be able to remove India's poverty.

### **Wide gap between rich and poor**

Poverty overcome wide gap between rich and poor in India. This is the main reason of poverty. The rich are growing richer and the poor are becoming poorer. This economic gap between the two must be reduced. Our social system should be changed. The poor people must get all help to reap the fruits of Independence.

### **Corruption and black money**

Poverty has corruptions in every walk of life. There is inefficiency in offices. People have become selfish. They neglect the national interests. Black money causes the problem of rising prices. Some people have all the privileges. But many others are suffering. Black money affects our economy. It creates poverty.

### **Effects of poverty**

#### **Illiteracy**

In Poverty of India, the people are not growing, therefore, the illiteracy. Poor people are becoming primary reason illiteracy. They do not get any education, and it is tough for poor individuals who have not the necessity of life.

#### **Child labour**

In India, there are most of the boys and girls are uneducated and doing work as a child labour. They became the victim of child labour reason is poverty.

#### **Problem in living condition**

Poverty makes the people for the insufficient place to be live. They have not a proper place to live there. Most of the low-income families are living in houses with one room only.

#### **Less of nutrition**

Poverty is the leading cause of inadequate diet and insufficient nutrition. The resources of poor people are very limited, and its effect can see in their food.

#### **Unemployment**

Poor people move from villages to towns and form one city to another in search of employment/work. Since they are mostly illiterate and un-skilled, there are very few job opportunities open to them. Due to unemployment, many poor people are forced to live an unfulfilled life.

#### **Awareness towards sanitation**

A poverty person has a mere knowledge about hygiene, and they are very careless about this all. They are not aware of the harmful consequences of not maintaining proper hygiene. The government is taking initiatives to make available clean and safe water, and proper sanitation system to them.

#### **Feminization of poverty**

Poverty effects on most of the women compare then man. Women are the worst victim of poverty. The total of poor women outnumbers the total population of poor people. The causes include low income, gender-inequality, etc. They deprived of proper-diet, medicines and health treatment.

### Concentration in social disparity

The poverty is the reason for a number of people is distributed between rich and poor people. Concentration of wealth in the hands of few rich people leads to social disturbances and revolts. Fair or even distribution of wealth leads an overall improvement in general standard of living of individuals. There are the income disparity and unequal distribution of national wealth between the wealthy and poor people.

### Prevention of Poverty

- We should solve the poverty with all make a unity in this country. It will be very encouraged and helpful for all.
- There are farmers must get all facilities for irrigation to solve his agriculture problem.
- Farmers should take an excellent training and education of the better farming.
- Agriculture will become so much profitable when all training and teaching provide to them.
- An every year the rising population should check by a census.
- Family planning schemes should introduce at everywhere.
- There should not be any corruption in India. Everyone should do his work efficiently in his offices.
- For developing country, more and more industries should be set up to meet the needs of the country.

### Poverty in India

People living in poverty are often socially excluded and marginalized. Their right to effectively participate in public affairs is frequently ignored, and thus elimination of poverty is much more than a humanitarian issue, as it is more of a human rights issue. Thus, eradication of poverty and hunger is the basis of all development process.

During the last two decades, India has lifted more than 100 million of its citizens from extreme poverty; still, it is home to a very large number of people living in abject poverty.

- Why are People Poor?

People are poor because they lack choices both economic and social.

- Why do they lack Choices?

They lack choices because they do not have basic freedoms and capabilities.

- What are basic Freedoms and capabilities?

The freedoms through which people can empower themselves, the capabilities through which poor can take their decisions. The broad freedoms that poor lacks are: Freedom of Choice; Freedom of Justice etc.

- Why do the poor lack Freedoms and Capabilities?

### They lack it because of the following reasons:

- The government is not willing to provide them.
- The Institutions of empowerment are weak.
- Ours is an Entitlement based system, in which the political parties and the government prefer to take short-term measures of the distribution of freebies to attract voters.
- The Political system does not believe in Empowering people through long-term measures of Education, awareness, Justice, Health and Productivity.
- Huge presence of Inequality.
- Lack of understanding of the nature of poverty.
- What are the solutions?

## Poverty Head Count Ratio versus Poverty Gap Ratio

### Poverty Head Count Ratio

The Poverty Head Count ratio measures the proportion of population whose per capita income/ consumption expenditure is below the official Poverty line or in simple terms is measures the total number of people living below the poverty line.

The number of people living below poverty line has decreased from 74.5 Million in the year 1993-94 to 52.8 Million in the year 2011-12.

Head Count Ratio is a simpler measure. It is widely used and represents the cut-off point below which people are considered as poor.

HeadCount ration does not reflect the severity of poverty.

### Absolute versus Relative Poverty

#### Absolute Poverty

*Absolute poverty* is when we consider every poor person as equal. The general definition of poverty which is valid at all times and for all economies is called absolute poverty.

Absolute poverty approach considers a poor in India as equal to a poor in the USA.

The simplest definition of being poor is '*being unable to subsistence*' that is, being unable to eat, drink, have shelter and clothing.

A common monetary measure of absolute poverty is '*receiving less than \$1 a day...*'. (In 2008, the World Bank revised this figure to \$1.25 a day, and then again to \$1.90 a day in 2015.)

### Poverty Gap Ratio

The Poverty Gap Ratio is the gap by which mean consumption of the poor below poverty line falls short of the poverty line.

It indicates the depth of poverty; the more the PGR, the worse is the condition of the poor. While the number of poor people indicates spread of poverty, PGR indicates the depth.

During 2004-05 to 2011-12, PGR also reduced in both rural and urban areas. While the rural PGR declined from 9.64 in 2004-05 to 5.05 in 2011-12 in the urban areas, it declined from 6.08 to 2.70 during the same period. A nearly 50% decline in PGR both in rural and urban areas during 2004-05 to 2011-12, reflects that the conditions of poor have improved both in urban and rural areas.

The poverty gap index can be interpreted as the average percentage shortfall in income for the population, from the poverty line

A higher poverty gap index means that poverty is more severe.



#### Relative Poverty

The difficulties involved in the application of the concept of "absolute poverty", made some researchers to abandon the concept altogether. In place of absolute standards, they have developed the idea of relative standards that is, standards which are relative to particular time and place. In this way, the idea of absolute poverty has been replaced by the idea of relative poverty.

Just as conventions change from time to time, and place to place, so will definitions of poverty. In a rapidly changing world, definitions of poverty based on relative standards will be constantly changing. Hence, Peter Townsend has suggested that any definition of poverty must be "related to the needs and demands of a changing society."

It can be argued that poverty is best understood in a relative way – what is poor in New York is not the same as what is poor in Mumbai (where over 50% of the population live in slums).

From the times immemorial society has been divided as rich and poor or powerful and weak. Some have dominant access to resources while some are deprived of resources. Situation is no different now. In democracy, government attempts to narrow this gap by taking up task of redistribution of resources. But resources at disposal of any society are limited and challenges are many. For effective redistribution and bringing lasting change, it is essential that deserving beneficiaries of government's help are identified. To identify poor we need some benchmarks and person falling below this benchmark will be regarded as poor. In India, initially most of the government support (mainly public distribution system) was universal, but in latter periods (from 1990's) they adopted targeted support which was meant only for deserving poor. This was due to fiscal constraints and a move from socialism to market based economy as result of LPG reforms. Major landmark in this was adoption of 'Targeted Public distribution System' in 1990's in which subsidized food was only meant for Below Poverty Line people and determination of Poverty line became a big issue since then.

It should be noted that 'determination of poverty line' and 'identifications of poor/beneficiary' are almost different things. Poverty line is (was) determined by Planning Commission on the basis of data provided by 'National Sample Statistical Organization' (NSSO). NSSO conducts a survey at 5 year interval of a mere sample to capture consumption patterns of various sections of society. It is taken care that sample size represents character of the Nation (or a state) as a whole. This gives us data about various classes of consumption in the sample size. (For e.g. say how many people out of sample size consume what food? how many calories/nutrients they get, what is there expenditure on food and nonfood items? What people eat most within food – cereals, pulses, fruits? What are the patterns? And so on). This is goldmine of information that planning commission seeks.

Planning Commission quantifies (in terms of money) Calorific/Nutritional needs for a basic minimum living by taking an ideal 'poverty line basket'. This ideal basket includes food and nonfood items which are recommended by expert groups (among other things) which are constituted from time to time (NSSO job is only to collect data and patterns). So we'll have a monetary figure (Rs16/25/32 etc.) which that expert panel considers benchmark 'poverty line'. Then this poverty line is adopted by Planning Commission. For determination of this figure, reliance is obviously placed on data provided by NSSO.

Now we have, poverty line figure based on a minor sample and we need to determine number of poor in the country i.e. people whose consumption expenditure is below this poverty line. For this ratio of 'poor to the total sample size' is replicated on total population of the country. For e.g. If Survey Sample Size was of 200000 households and 50000 households are found to be consuming below the poverty line figure, then 25 % of total population of country will be considered below poverty line.

As we can see in given course of 'determination of poverty line' and estimation of 'number of poor' there is no identification of particular households. 'Number of poor below poverty line' in this sense is just a tool to measure effectiveness of government policies and make interstate, International or temporal comparisons. Other product of this exercise is 'poverty line' and it might be (or not) be used for actual identification of poor/beneficiaries.

Ministry of Rural Development is conducting BPL census for 'Rural poor' since 1992 on the basis on which rural poor are actually identified. In case of urban poor there no uniform mechanism in place and State governments/ UT admin. adopts their own methodology for identification. Having said this, relevance of identification on basis of poverty line is doubtful these days. It is widely accepted that poverty is multidimensional and different schemes of government should either be universal, or their beneficiaries should differ as per matter of scheme. For example MGNREGA is universal (now focus is on 250 backward districts). Food Security Act covers two-third population which is far more than BPL population. Indira Awas Yojna is for homeless (not for BPL), Sarva Shiksha Abhiyan or RTE are universal. However, many benefits from the government are still exclusively for BPL card holder such as free gas connection or kerosene oil.

Notwithstanding all this, poverty line and estimate of population will still be needed to measure and compare effect of policies of various national and state governments. Presumptions on which this line can be made are many and it is herculean task in continent type country like India. There is always fear of exclusion of deserving ones and inclusion of undeserving ones.

Poverty is a state of deprivation of people or society, in which they are not able to meet their basic needs such as food, clothing and shelter. In all this they have low capacity to deal with Socio-economic and environmental exigencies. This definition however can be contested for it doesn't include education,

healthcare and decent standard of living or dignified life. But it could be agreed upon that former are immediate needs and will be preferred by any deprived person. For e.g., India in initial decades after independence was severely short of food grains and that prompted government to invest in agriculture which resulted in green revolution. At that time investment in social infrastructure was negligible and now that India has achieved self-sufficiency, focus has shifted to Health and education.

There are many challenges in marking a poverty line, such as determining components of poverty line basket. There are price differentials (of constituents of basket) which vary from state to state and period to period. Further, consumption patterns, nutritional needs and prices of components keep on changing as per dynamics of macro economy and demography.

### **Let's take up and discuss some issues relevant to poverty line**

#### **Absolute poverty vs Relative poverty**

Almost all underdeveloped and developing countries prefer targeting Absolute poverty. Under absolute poverty certain minimum basic standards of living are defined and people living below these standards are termed in policy as poor or below poverty line. This is done by determining a poverty line basket and calculating monetary figure of that basket (as in India), which varies across countries.

In contrast relative poverty is measured in relation to rich people of the country. In this method certain percentage of economically bottom population is always considered below poverty line. In these countries BPL people may have all basic amenities and reasonable standard of living, but as their incomes are far below national per capita income they get support of government.

Argument that India should focus on absolute poverty need no further elaboration, given such low consumption of vast part of population which NSSO and various other studies reveal.

#### **Poverty line basket**

Determining composition of the basket is among most debated part of the issue. To make a living people consume innumerable items. Apart from food; housing, fuel, health, education, communication, conveyance, entertainment/recreations are the things which are important. But whether they should be included or not, if so their weights in basket, whether health should get preference over housing, or whether reasonable expenditure on recreation be included in basket etc. are toughest questions to be answered. Problem is that these are qualitative aspects, which are needed to be quantified.

Further, consumption varies as per age groups, occupation, regions, cultures and gender. This variation is hard to capture.

Over the last decade consumption by Indians has risen constantly and share of food in total consumption has fallen. Also, within food share of calorie rich cereals have fallen and Share of proteins, fat, nutrient rich items like pulses, milk, fruit has risen.

Historically focus of India's poverty like basket policy has been on consumption of calories which was first adopted in 1970's on recommendation Algah committee. It was believed that 2400 kcal in rural areas and 2100 Kcal in urban areas was sufficient to give good nutritious health to citizens. In this sense, number or percentage of people below poverty line and those of under or malnourished people, should be roughly same. But it is known that undernutrition is more rampant and widespread than poverty and outscores ratio of BPL people by huge margin. This forced our policy makers to look for other determinants of nutritional status and they found that pre natal/birth health of mother, post natal care of babies, Sanitation, open defecation, health and educational infrastructure has decisive impact on nutritional status of people. Lack (or presence) of many these things has pushed significant number of people towards undernutrition, even when they consumed more than needed calories. These issues were taken into account by Tendulkar committee to some extent. (More on this later)

#### **Reference period**

During the survey NSSO workers will ask certain questions to households. Period covered by these questions is called reference period. Care has to be taken that this period is representative of general pattern of consumption. If we take 'Poverty line Basket' it will cover food and nonfood items. In case of food,

expenditure is routine and a month's consumption can give us data which represents general pattern. If we take consumption pattern of Nonfood item such as clothes or footwear, we find that in a normal household, these are once or twice in year expenditure. If we take reference period 30 days for these products we'll find in majority of household no expenditure at all. So reference period should be different for different category of items.

### **Income based poverty line vs consumption based poverty line**

We have seen that NSSO captures consumption expenditure which used by Planning commission to determine poverty line. An alternative way of calculation of poverty line can be one based on Income of the population. But till now all committees have favored consumption based poverty line due to following factors

Huge majority of population has irregular income, most of them are in informal sector which consists of self-employed people, daily wage laborers etc. Income of this group is highly variable both temporally and spatially, while consumption pattern are comparatively much stable.

Even in case of regular wage earners, there are additional side incomes in many cases, which is difficult to take into account.

For e.g. MGNREGA provides employment for about 100 days, for rest of the time too people will earn something.

NSSO's sample based surveys use a 'reference period' (say 30 days). They will ask households under survey about their consumption in last 30 days. This they will take a representative of general consumption of that household. This is not possible in case of income.

So we can conclude that in absence of reliable data Income based approach can't be relied upon.

Now we'll see evolution of poverty line in India in Its current form. A working/expert group recommends a particular poverty line which attracts intense debate and criticism. After this new Expert group is appointed. This group has to convert results of past years by the previous methodologies into those by new methodologies, sometimes using old base year, as per data available with NSSO. This is essential so as to make poverty line and population BPL comparable. This is a bit confusing as there is no consistency and new data keep coming. We just need to have basic idea of evolution and most of the figures or data can be ignored. It is given just for an idea of patterns.

One of the earliest estimations of poverty was done by Dadabhai Naoroji in his book, 'Poverty and the Un-British Rule in India'. He formulated a poverty line ranging from Rs 16 to Rs 35 per capita per year, based on 1867-68 prices. The poverty line proposed by him was based on the cost of a 'subsistence diet' consisting of 'rice or flour, dhal, mutton, vegetables, ghee, vegetable oil and salt'.

Next, in 1938, the **National Planning Committee (NPC)** estimated a poverty line ranging from Rs 15 to Rs 20 per capita per month. Like the earlier method, the NPC also formulated its poverty line based on 'a minimum standard of living perspective in which nutritional requirements are implicit'. In 1944, the authors of the 'Bombay Plan' suggested a poverty line of Rs 75 per capita per year.

### **Working Group of planning commission, 1962**

This was first crated by planning commission to determine desirable minimum level of expenditure required to make a living.

Recommended 'national minimum consumption expenditure' for a household of 5

Rural - Rs 100/ month (Rs 20/ Person)

Urban - Rs 125/ month (Rs 25/ Person)

It excluded Health and educational expenditure on assuming that it is provided by state.

Used recommendation on 'Balanced diet' by Indian council of Medical Research.

### **Task force of 1979, under Algah**

Poverty line of 1962 was used during 1960's and 1970's at both National and state level. But it attracted intense debate for its low figures. In response taskforce under Dr. Y.K. Algah was created to revisit poverty line.

'Average calorie requirements' were estimated, separately for the all -India rural and urban areas on the recommendation of Nutrition Expert Group. This resulted in different 'Poverty line basket' for urban and rural areas. The estimated calorie norm was 2400 kcal per capita per day in rural areas and 2100 kcal per capita per day in urban areas.

Now these calorie requirements needs some 'monetary value' which can be determined by ascertaining 'quantity' of consumption and 'prices/value' of that quantity. Data relating to quantity and value was provided by NSSO survey.

It was estimated that, on an average, consumer expenditure (food and non-food) of Rs.49.09 per capita per month was associated with a calorie intake of 2400 per capita per day in rural areas and Rs.56.64 per capita per month with a calorie intake of 2100 per day in urban areas. This 'Monthly Per Capita Expenditure' was termed as poverty line. This poverty line was used for upcoming years after adjusting for rise in prices.

(Please note that till now difference was made only in Rural and Urban poverty line and there are only All India rural and urban poverty lines. But next Expert Group will recommend 'state specific poverty line')

### **Expert group 1993 (Lakdawala)**

This panel didn't redefine poverty line and retained mechanism defined by Algah expert group.

Instead it disaggregated 'All India poverty line' to 'State specific Poverty Line' (using Fisher index) for base year 1973-74.

For latter periods these 'Rural and Urban Poverty lines of states' were updated by taking into account

- 'Consumer Price Index- Agricultural Labor' for 'Rural state specific poverty line' and
- 'CPI- Industrial workers' for 'Urban state specific poverty line'.

Then All India poverty Ratio (rural and urban) was derived through 'population based weighted average' of poverty ratios of various states.

Hence 'poverty line' of India is converted in to 'state poverty lines' while 'poverty ratios' of states were aggregated to 'All India poverty ratio'

Note- Poverty line is based on consumption expenditure which gets affected by Inflation. So, for latter years poverty lines are increased using CPI-AL/IW. They won't calculate new poverty line every year. (CPI-AL doesn't include housing component, but CPI-IW includes it.)

Group was able to give State Specific poverty lines of only 18 states as in other states adequate data was not available. For these (remaining) states poverty line was determined by equating them with one of the 18 states on basis of Physical Contiguity and similarity of economic profile of those states.

This Mechanism was adopted by planning commission and was used till 2011, when recommendations of Tendulkar expert group were adopted.

### **Expert Group 2005 (Tendulkar)**

Largely it adopted same poverty line (Lakdawala) and major departures were -

It adopted 'Mixed Reference Period' in place of 'Uniform reference period'

During previous methodologies, a 'uniform reference period' was used that included 30 days just before the survey for all food and nonfood items. But Tendulkar group changed 'reference period' to past one year for 5

nonfood items viz., clothing, footwear, durable goods, education and institutional medical expenses. For other items 30 days reference period was retained. This is called 'Mixed reference period'

Further, it recommended a shift away from basing the Poverty Line basket (PLB) in caloric intake and towards target nutritional outcomes.

It called for an explicit provision in the Poverty Line Basket to account for private expenditure in health and education.

1st point under Algah committee mentions that it adopted separate PLB for Urban and rural areas. But Tendulkar committee ended this practice by using a uniform basket (for both rural and urban) based on previous urban poverty line basket.

These changes were made for base year 2004-05 and ahead. These rendered past poverty lines incomparable with new ones as they were based on URP and Separate baskets for rural and urban India.

These expenditure as per expert group was sufficient to cover food and nonfood expenditure, including that on health and education. This created furore in public and government was forced to appoint a new expert group under Dr. Rangarajan.

It is often said that Tendulkar Poverty line is equivalent to World Bank's \$1 or \$1.25 in PPP terms. This purely incidental and poverty line calculated by Tendulkar had nothing to do with World Bank methodologies. But government often defended poverty line claiming that it is as per global standards.

### **Expert group, 2012 (Rangarajan)**

Expert group submitted its report in 2014 giving 'per capita monthly expenditure' as Rs. 972 in rural areas and Rs. 1407 in urban areas as poverty line. It preferred to use 'Monthly expenditure of Household of five' for the poverty line purpose which came out to be Rs 4860 in rural areas and Rs. 7035 in urban areas. It argued that considering expenditure of household is more appropriate than that of individuals. Living together brings down expenditure and as expenses such as house rent, electricity etc. gets divided into 5 members.

### **Other major recommendations were -**

It reverted to old system of separate poverty line baskets for Rural and urban areas, which was unified by Tendulkar group.

Instead of 'Mixed reference Period' it recommended 'Modified Mixed reference period' in which reference periods for different items were taken as –

365-days for clothing, footwear, education, institutional medical care, and durable goods,

7-days for edible oil, egg, fish and meat, vegetables, fruits, spices, beverages, refreshments, processed food, pan, tobacco and intoxicants, and

30-days for the remaining food items, fuel and light, miscellaneous goods and services including non-institutional medical; rents and taxes.

Report says that poverty line should be based on

Certain normative levels of 'adequate nourishment' plus clothing, house rent, conveyance, education And

A behaviorally determined level of other non-food expenses.

### **Normative means – what is ideal and desirable?**

Behavioral Means – What people use or consume as per general behavior

For normative levels of adequate nutrition – average requirements of calories, proteins and fats based on ICMR norms, differentiated by age, gender and activity for all-India rural and urban regions is considered.

Calories requirement – 2090 kcal in urban areas and 2155 Kcal in rural areas

Proteins – for rural areas 48 gm and for urban areas 50 gm

Fat – for urban areas 28 gm and for rural areas 26 gm

Normative levels for fat and protein have been introduced for the first time and those for calories are reduced from earlier standards of 2100 kcal and 2400 kcal for urban and rural areas respectively. This was in line with recommendations of Indian Council of Medical Research. It was found by council that due to change in lifestyle, more automation in industries, growing use of automobiles etc. minimum calorific consumptions required has fallen.

Poverty line by the group is also based on Independent survey conducted by 'Center for Monitoring Indian Economy' (CMIE). The results under this survey are remarkably close to those we get through NSSO survey. Confirming adequacy of NSSO data and group's methodologies. CMIE considers maximum income required to meet consumption expenses of a household. If Income is above consumption expenses then household is above poverty line otherwise (if not able to save anything) it is below poverty line. CMIE conducted survey on 150000 households.

Again National Urban and Rural poverty lines were converted to State specific poverty lines by using Fisher Index. This gave us poverty 'ratios' in states and state's poverty ratios was weighted average of rural and urban state poverty ratios.

As per these estimates the 30.9% of the rural population and 26.4% of the urban population was below the poverty line in 2011-12. The all-India ratio was 29.5%. In rural India, 260.5 million individuals were below poverty and in urban India 102.5 million were under poverty. Totally, 363 million were below poverty in 2011-12. It also noted that there was substantial drop in poverty ratio from 2009 levels.

### **World Bank's Poverty line**

The approach of poverty estimation by the World Bank is similar to that employed in India and in most of the developing countries. The World Bank estimates of poverty are based on the poverty line of US \$1.25 per person per day measured at 2005 international price and adjusted to local currency using PPP (Purchasing Power Parity).

The international poverty line is worked out as the average of national poverty lines in poorest fifteen countries (in terms of consumption per capita). For this world bank runs as 'International Comparison Program'.

All this is essential for making International comparisons. Further, performance of a country on this front is major criteria for eligibility or other terms and condition for Loans. But it is not of much relevance for domestic policy making as it fails to provide variation within a country, region, society etc. Domestic poverty line in contrast tries to capture all local variations such as Inter-state or Rural-urban.

Asian Development Bank too has its own poverty line which is currently at \$ 1.51 per person per day.

### **Identification of Poor/Beneficiaries**

The Ministry of Rural Development has conducted a BPL Census in 1992, 1997, 2002, and 2011 to identify poor households. The BPL Census is used to target families for assistance through various schemes of the central government. The 2011 BPL Census is being conducted along with a caste census, and is dubbed the Socio-Economic & Caste Census (SECC) 2011. It is being conducted by Ministry of Rural Development with partnership of states. As it has been mentioned earlier that previous census were only for rural poor, but this is first time that a comprehensive census will include both urban and rural poor. As the name suggests it will be surveying households to collect a number of socio-economic indicators such as literacy, housing, assets and caste.

The entire exercise will be paperless, done on handheld electronic device (tablet PC). This will drastically reduce data entry errors and discretion. Census is still underway, and you can see work done so far here.

It attempts to minimize inclusion and exclusion errors. For this it uses certain indicators which automatically exclude or include households. For example if a household has 4 wheeler vehicle, it will be automatically

excluded or if a household is homeless or there is no working age and physically capable member in household, it will get automatically excluded.

### MIGRATION: Types, Causes and Consequences

#### Indian Diaspora

- During colonial period (British period) millions of the indentured labourers were sent to Mauritius, Caribbean islands (Trinidad, Tobago and Guyana), Fiji and South Africa by British from Uttar Pradesh and Bihar; to Reunion Island, Guadeloupe, Martinique and Surinam by French and Dutch and by Portuguese from Goa, Daman and Diu to Angola, Mozambique to work as plantation workers.
  - All such migrations were covered under the time-bound contract known as Girmit Act (Indian Emigration Act). However, the living conditions of these indentured labourers were not better than the slaves.
- The second wave of migrants ventured out into the neighbouring countries in recent times as professionals, artisans, traders and factory workers, in search of economic opportunities to Thailand, Malaysia, Singapore, Indonesia, Brunei and African countries, etc. and the trend still continues.
  - There was a steady outflow of India's semi-skilled and skilled labour in the wake of the oil boom in West Asia in the 1970s. There was also some outflow of entrepreneurs, storeowners, professionals, businessmen to Western Countries.
- Third wave, of migrant was comprised professionals like doctors, engineers (1960s onwards), software engineers, management consultants, financial experts, media persons (1980s onwards), and others migrated to countries such as USA, Canada, UK, Australia, New Zealand and Germany, etc.
- These professionals enjoy the distinction of being one of highly educated, the highest earning and prospering groups. After liberalisation, in the 90s education and knowledge-based Indian emigration has made Indian Diaspora one of the most powerful Diasporas in the world. In all these countries, Indian diaspora has been playing an important role in the development of the respective countries

Actually migration was recorded beginning from the first Census of India conducted in 1881. This data were recorded on the basis of place of birth. However, the first major modification was introduced in 1961 Census by bringing in two additional components viz; place of birth i.e. village or town and duration of residence (if born elsewhere).

- Further in 1971, additional information on place of last residence and duration of stay at the place of enumeration were incorporated. Information on reasons for migration were incorporated in 1981 Census and modified in consecutive Censuses.
- In the Census of India migration is enumerated on two bases:
  - Place of birth, if the place of birth is different from the place of enumeration (known as life-time migrant);
  - Place of residence, if the place of last residence is different from the place of enumeration (known as migrant by place of last residence).
- As per 2001 census, out of 1,029 million people in the country, 307 million (30 per cent) were reported as migrants by place of birth. However, this figure was 315 million (31 per cent) in case of place of last residence.

#### Streams of Migration

- Under the internal migration, four streams are identified: (a) rural to rural (R-R); (b) rural to urban (R-U); (c) urban to urban (U-U); and (d) urban to rural (U-R).
- As far as emigration from India is concerned it is estimated that there are around 20 million people of Indian Diaspora, spread across 110 countries.

#### Spatial Variation in Migration

- Among the urban agglomeration (UA), Greater Mumbai received the higher number of migrants. Intra-states migration constituted the largest share in it. These differences are largely due to the size of the state in which this Urban Agglomeration is located

### **Causes of Migration**

- These reasons can be put into two broad categories:
- push factor, these cause people to leave their place of residence or origin; and
- pull factors, which attract the people from different places

### **Consequences of Migration**

- People tend to move from place of low opportunity and low safety to the place of higher opportunity and better safety.
- Consequences can be observed in economic, social, cultural, political and demographic terms.

#### **Economic Consequences**

- A major benefit for the source region is the remittance sent by migrants. Remittances from the international migrants are one of the major sources of foreign exchange. In 2002, India received US\$ 11 billion as remittances from international migrants.

#### **Demographic Consequences**

- Migration leads to the redistribution of the population within a country. Rural urban migration is one of the important factors contributing to the population growth of cities. Age and skill selective out migration from the rural area have adverse effect on the rural demographic structure.

#### **Social Consequences**

- Migrants act as agents of social change. The new ideas related to new technologies, family planning, girl's education, etc. get diffused from urban to rural areas through them

#### **Environmental Consequences**

- Overcrowding of people due to rural-urban migration has put pressure on the existing social and physical infrastructure in the urban areas. This ultimately leads to unplanned growth of urban settlement and formation of slums shanty colonies

#### **Others**

- Migration (even excluding the marriage migration) affects the status of women directly or indirectly

The market for advanced skills has become truly a global market and the most dynamic industrial economies are admitting and recruiting significant proportions of the highly trained professionals from poor regions. Consequently, the existing underdevelopment in the source region gets reinforced.

# UNIT-7

## STATISTICAL METHODS

### Statistics- Meaning

"Statistics" means numerical presentation of facts. Its meaning is divided into two forms - in plural form and in singular form. In plural form, "Statistics" means a collection of numerical facts or data example price statistics, agricultural statistics, production statistics, etc. In singular form, the word means the statistical methods with the help of which collection, analysis and interpretation of data are accomplished.

### **Data**

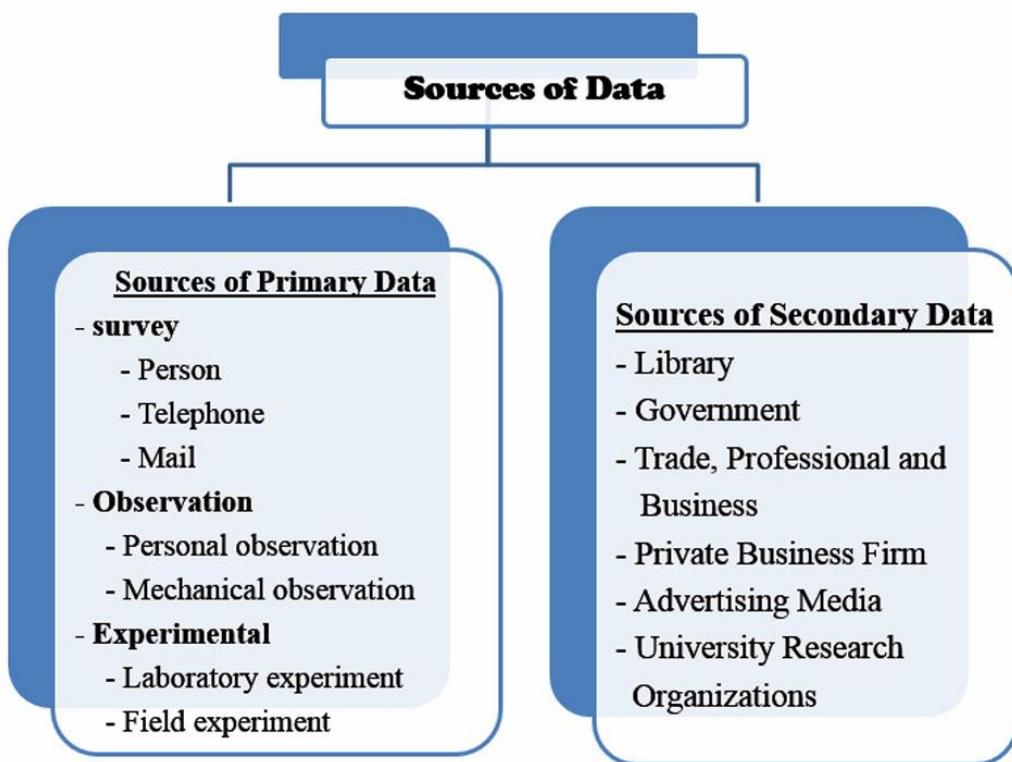
Data refers to any group of measurements that happen to interest us. These measurements provide information the decision maker uses. Data are the foundation of any statistical investigation and the job of collecting data is the same for a statistician as collecting stone, mortar, cement, bricks etc. is for a builder.

### **COLLECTION OF DATA**

Collection of data is the basic activity of statistical science. It means collection of facts and figures relating to particular phenomenon under the study of any problem whether it is in business economics, social or natural sciences. Such material can be obtained directly from the individual units, called primary sources or from the material published earlier elsewhere known as the secondary sources.

#### **The data collected may be:**

- Primary Data
- Secondary Data



Primary data means the raw data (data without fabrication or not tailored data) which has just been collected from the source and has not gone any kind of statistical treatment like sorting and tabulation. The term primary data may sometimes be used to refer to first hand information.

#### **Primary data are collected systematically through following activities:**

- By conducting surveys,
- Taking in-depth interviews of respondents (These are individuals who give necessary information to the interviewer),
- Through experimentation,
- By direct observations,
- Ethnographic research (It primarily involves the study of an ethnic group of people and their respective culture),
- Focus groups,
- Participatory research, etc.

**Secondary data**, on the other hand, are information already collected by others or somebody else and later used by a researcher (or investigator) to answer their questions in hand. Hence, it is also called second-hand data. It is a ready-made, quantitative information obtained mostly from different published sources like companies' reports, statistics published by government, etc. Here the required information is extracted from already known works of others (e.g. Published by a subject scholar or an organization, government agency, etc.). It is readily available to a researcher at his desk or place of work.

Assume, you are preparing a brief report on your country's population for which you take reference of the census published by government, is an example of secondary data collection.

#### **The collection of secondary data is from internal and external published sources.**

- **Internal sources of secondary data are:**
  - Company's accounts,
  - Sales figures,
  - Reports and records,
  - Promotional campaigns' data,
  - Customers' feedback,
  - Cost information,
  - Marketing activities, so on.
- **External sources of secondary data include:**
  - Data published by country's central, state and local governments,
  - Data even published by foreign governments,
  - Publications released by international organizations (like the IMF, WHO, ILO, UNO, WWF, etc.) and their subsidiary bodies,
  - Reports prepared by various commissions and other appointed committees,
  - Results of research work published by research institutions, universities, subject scholars, economists, etc.,
  - Books, newspapers, and magazines,
  - Reports and journals of trade unions, industries, and business associations,
  - Information released by a central bank, stock exchanges, etc.,
  - Public libraries,
  - Archives, Directories, Databases, and Indexes,
  - Old historical records,
  - Online websites, blogs, and forums.

Sr. No	Points	Primary Data	Secondary Data
1.	Meaning	Data collected by researcher himself	Data collected by other persons.
2.	Originality	Original or unique information	Not original or unique information.
3.	Adjustment	Doesn't need adjustment, is focused	Needs adjustment to suit actual aim.
4.	Sources	Surveys, observations, experiments	Internal records, Govt. published data, etc.
5.	Type of data	Qualitative data	Quantitative data
6.	Methods	Observation, experiment, interview	Desk research method, searching online, etc.
7.	Reliability	More reliable	Less reliable
8.	Time consumed	More time consuming	Less time consuming
9.	Need of investigators	Needs team of trained investigators	Doesn't need team of investigators
10.	Cost effectiveness	Costly	Economical
11.	Collected when	Secondary data is inadequate	Before primary data is collected
12.	Capability	More capable to solve a problem	Less capable to solve a problem
13.	Suitability	Most suitable to achieve objective	May or may not be suitable
14.	Bias	Possibility of bias exist	Somewhat safe from bias
15.	Collected by	Researcher or his agents	Persons other than who collects primary data
16.	Precaution to use	Not Necessary	Quite necessary

### MEASURES OF CENTRAL TENDENCY

- Average is defined as an attempt to find one single figure to describe whole figure.
- Average is frequently referred to as a Measure Of Central Tendency.
- Measures of central value are also popularly known as measures of central tendency because its value lies between two extreme values.

#### Types of average:-

- Arithmetic mean – simple mean & weighted mean
- Median
- Mode
- Geometric mean
- Harmonic mean

**Arithmetic mean-** Its value is obtained by adding together all the items and by dividing this total by the number of items.

- $AM = X_1 + X_2 + X_3 + \dots + X_n / N$  or  $\sum x / n$
- For correcting incorrect value of ARITHMETIC MEAN is – from incorrect  $\sum x$  deduct wrong items and add correct items and then divide the correct with nth observation.
- The use of median and mode would be better in open end distributions because of the difficulty of ascertaining lower limit & upper limit in open end distributions it is suggested that in such distributions arithmetic mean should not be used.

#### Mathematical properties of Arithmetic mean-

- 1) The sum of the deviations of the items from the arithmetic means is always zero.
- 2) Mean is characterized as a point of balance i.e. the sum of the positive deviations from it is equal to the sum of the negative deviations from it.
- 3) The sum of the squared deviations of the items from arithmetic mean is minimum that is less than the sum of the squared deviations of the items from any other value.
- 4) Combined mean =  $x_1 + x_2 + x_3 + \dots + x_n / n_1 + n_2$

5) Mean is affected by both change of scale and change of origin. As if a constant value k is multiply in a series then effect on mean is (mk) and if the constant value is subtracted in a series ( $m-k$ )

> Median & Mode is positional average

> Arithmetic mean, harmonic mean, geometric mean and weighted average mean is a mathematical average.

> Uses of mean in index number and in standardized birth & death rate.

### MEDIAN:

The median is a simple measure of central tendency. To find the median, we arrange the observations in order from smallest to largest value. If there is an odd number of observations, the median is the middle value. If there is an even number of observations, the median is the average of the two middle values.

Thus, in a sample of four families, we might want to compute the median annual income. Suppose the incomes are Rs. 30,000 for the first family; \$50,000, for the second; \$90,000, for the third; and \$110,000, for the fourth. The two middle values are \$50,000 and \$90,000. Therefore, the median annual income is  $(\$50,000 + \$90,000)/2$  or \$70,000.

### POINTS TO REMEMBER:

- The middle value in the distributions.
- It is just the 50th percentile value below which 50% of the values in the sample fall.
- Median Is Called The Positional Average
- If N is odd then median is an actual value with the remainders of the series in two equal parts on either side of it. If N is even the median is a derived figure, half the sum of the two middle values
- Odd= middle value
- Even =  $n+1/2$ th

### Mathematical property of median is-

- 1) The sum of the deviations of the items from median, ignoring signs is the least.
2. Uses of median- in open end distributions, it is more satisfactory measure of the central tendency than the mean.
3. Most appropriate average dealing with qualitative data.
4. Quartiles= 4 equal parts, deciles= 10 equal parts, percentiles= 100 equal parts.
5. Median can be determined by graphic method also by OGIVES.

### MODE

- The MODE or the modal value is that value in a series of observation which occurs with the greatest frequency.
- The mode is often said to be the value which occurs most often that is with the highest frequency.
- Mode is the value which has the greatest frequency density in its immediate neighborhood. For this reason mode is also called the most typical or fashionable value of distributions.
- For determining mode count the number of times the various values repeat themselves & the value occurring the maximum number of times is the modal value.
- When there are two or more values having the same maximum frequency one cannot say which is the modal value & hence mode is said to be ill defined. Such a series is also known as bimodal or multimodal.
- Where mode is ill defined its value may be ascertained by the formula based upon relationship between mean, median, mode,  $\text{Mode} = 3\text{Median} - 2\text{Mean}$ . This measure is called the empirical mode.
- We can locate mode graphically using histogram and frequency polygon.
- Mode is used in open end distributions/ qualitative phenomenon 7

- Mode is the most meaningful measure of central tendency in case of highly skewed or non-normal distribution, as it provides the best indication of the maximum concern.
- Relationship among mean, median and mode is,  $\text{Mode} = 3\text{median} - 2\text{mean}$ .

### GEOMETRIC MEAN

- It is defined as the nth root of the product of n items or values.

#### Properties of geometric mean are -

- 1) The product of the values of series will remain unchanged when the value of geometric mean is substituted for each individual value.
- 2) The sum of the deviations of the logarithms of the original observations above or below the logarithm of the geometric mean is equal. This also means that the value of the geometric mean is such as to balance the ratio deviations of the observations from it. Because of this property this measure of central value is especially adopted to average ratios, rates of change & logarithmically distributed series.

> Uses- to find average percentage increase in sales, production, population, in construction of index number.

> Geometric mean is not computed when there are both negative & positive values in a series or one more of the values is zero.

### HARMONIC MEAN

The Harmonic Mean is based on the reciprocals of the numbers averaged, it is defined as the reciprocal of the arithmetic mean of the reciprocal of the individual observation.

- $\text{HM} = N / (1/x_1 + 1/x_2 + 1/x_3 \dots + 1/x_n)$
- Uses – It is useful for computing the average rate of increase in profits of a concern or average speed at which a journey has been performed or the average price at which an article has been sold. The rate usually indicates the relation between two different types of measuring units that can be expressed reciprocally.
- Weighted harmonic mean =  $\sum w / \sum (w/x)$
- Relationship among the averages-  $\text{AM} > \text{GM} > \text{HM}$ .

### MEASURES OF DISPERSION

- Dispersion is the measure of the variation of the items.
- A measure of dispersion or variation is one that measures the extent to which these are differences between individual observations & some central or average value. In measuring variation we shall be interested in the amount of the variation or its degree but not in the direction.
- It is important to measure the reliability.

#### Methods of studying dispersion are as follows:-

- 1) The range
- 2) The interquartile range or the quartile deviation
- 3) The mean deviation or the average deviation
- 4) The standard deviation or the root square mean deviation
- 5) The Lorenz curve

**Range-** It is the difference between the largest item and the smallest item.  $\text{Range} = \text{highest} - \text{lowest}$

- Coefficient of range =  $\frac{\text{highest} - \text{lowest}}{\text{highest} + \text{lowest}}$

- Inter Quartile Range Or Quartile Deviation- It represents the difference between the third quartile and the first quartile. Inter quartile range = Q3-Q1. Quartile deviation = Q3-Q1/2. Co efficient of quartile deviation= Q3-Q1/Q3+Q1.
- Percentile range is also used as measure of dispersion. Percentile range= p90-p10. Semi percentile range = p90-p10/2
- Range and quartile deviation they do not show the Scatterness around as average.

**Mean deviation-** The mean deviation is also known as the Average Deviation. It is the average difference between the items in a distribution from the median or mean of that series. It is advantage in taking the deviations from median because the sum of the deviations of items from median is minimum when signs are ignored. The arithmetic mean is more frequently used in calculating the value of average deviations & this is the reason it is also called mean deviation. Mean deviation (MD) =  $\sum|d|/n$ , d= (x-a), a= assumed, co efficient of mean deviation = MD/Median if taken from median and if taken from mean the MD/Mean.

The greatest drawback of this method is that algebraic signs are ignored while taking the deviations of the items as it makes the method non-algebraic. It is especially effective in reports presented to the general public or to groups not familiar with statistical methods.

**Standard deviations-** This concept was introduced by Karl Pearson in 1893. It is also known as Root Mean Square Deviations for the reason that it is the square root of the means of the squared deviations from the arithmetic mean. It is denoted by small Greek letter  $\sigma$  sigma.

The standard deviations measures the absolute dispersion or variability of a distribution, the greater the amount of dispersion or variability the greater the standard deviation, for the greater will be the magnitude of the deviations of the values from their mean. A small SD means a high degree of uniformity of the observations as well as homogeneity of a series, a large standard deviation means just the opposite.

#### Difference between Mean deviation and standard deviation-

- 1) Algebraic signs are ignored while calculating mean deviation whereas in the calculation of standard deviation signs are taken in to a/c.
  - 2) Mean deviation can be computed either from median or mean but standard deviation is always computed from arithmetic mean because the sum of the squares of the deviations of items from arithmetic mean is least.
- > Population standard deviation is denoted by  $\sigma$  whereas sample standard deviation is denoted by s.
- > Standard deviation is affected by change of scale & independent of change of origin.

#### Mathematical properties of standard deviations are as follows-

- 1) It is possible to compute combined mean of two or more than two groups, similarly we can also compute combined standard deviation of two or more group.
- 2) The standard deviation of the first n natural numbers obtained from  $\sigma = \sqrt{1/12(n^2-1)}$
- 3) The sum of the squares of deviations of items in the series from their arithmetic mean is minimum. The sum of the squares of the deviations of items of any series from a value other than the arithmetic mean would always be greater this is the reason why standard deviation is always computed from the arithmetic mean.
- 4) For symmetrical distributions

Mean  $\pm 1\sigma = 68.27\%$ , mean  $\pm 2\sigma = 95.45\%$ , mean  $\pm 3\sigma = 99.73\%$

- 5) In normal distribution there is a fixed relationships between the three most commonly used measures of dispersion. The Q.D is smallest, the MD next & SD is greatest. QD=  $2/3\sigma$ , MD=  $4/5\sigma$  so, QD> MD> SD

**Co efficient of variation-** Relative measures of SD is known as Co-Efficient Of Variation. This measures developed by Karl Pearson. Co efficient of variation is greater is said to be more variable or less consistent, less uniform, less stable or less homogenous. On the other hand the series for which co efficient of variation is less is said to be less variable or more consistent more uniform, more stable or more homogenous. It is denoted by  $C.V = \sigma/x * 100$ .

**Variance=** square of standard deviation  $\sigma^2$ . Smaller the value of  $\sigma^2$  the lesser the variability or greater the uniformity in the population.

- Standard deviation is the best measure of variation.
- Correcting of incorrect value of SD=  $SD - \text{wrong value} + \text{right value}$  then divide by number of observation.

**LORENZ CURVE-** It is devised by **MAX O LORENZ**. It is a graphic method of studying dispersion. This curve was used by him for the first time to measure the distribution of wealth & income. The most common use of this curve is the study of the degree of inequality in the distribution of income & wealth between countries or between different periods of time. It is a cumulative percentage curve in which the percentage of items is combined with the percentage of other things as a wealth, profits & turnover.

As it is a graphical method, in this there is a line OP which is known as line of equal distribution. The line OP will make an angle of 45%. For any given distribution the curve will never cross the line of equal distribution. It will always lie below OP unless the distribution is uniform in which case it will coincide with OP. The greater the variability the greater is the distance of the curve from OP. Thus a measure of variability of the distribution is provided by the distance of the curve of the cumulated percentages of the given distribution from the line of equal distribution.

#### SKEWNESS, MOMENTS & KURTOSIS:

**SKEWNESS-** The term skewness means lack of symmetry in a frequency distribution. Skewness denotes the degree of departure of a distribution from symmetry and reveals direction of scatterness of the items. It gives us an idea about the shape of the frequency curve. When a distribution is not symmetrical, it is called skewed distribution. Skewness tells us about the asymmetry of the frequency distribution.

- When a series is not symmetrical it is said to be Asymmetrical Or Skewed.
- Skewness refers to the lack of symmetry.
- In a symmetrical distribution the value of mean, median & mode coincide. The spread of the frequencies is the same on the both sides of the center point of the curve. Mean= median= mode.
- A distribution which is not symmetrical is called a skewed distribution & such a distribution could either be positively skewed or negatively skewed.
- Symmetrical distribution= mean= median= mode
- Positive skewed distribution= mean> median> mode. (Skewed right)
- Negatively skewed distribution- mode> median>mean (skewed left)
- In a moderately symmetrical distributions the interval between the mean & the median is approximately 1/3rd of the interval between the mean & the mode. It is this relationship which provides means of measuring the degree of skewness.
- Dispersion is concerned with the amount of variation rather than with its direction. Skewness tell us about the direction of the variation or the departure from symmetry.
- Measures of Skewness are dependent upon the amount of dispersion.

#### Skewness is present if-

- 1) Mean, median, Mode do not coincide.
- 2) When data are plotted on a graph they do not give the normal bell shaped.
- 3) The sum of positive deviations from median is not equal to the sum of the negative deviations.
- 4) Quartiles are not equidistant from the median.
- 5) Frequencies are not equally distributed at points of equal deviations from mode. Skewness is absent if above conclusions are present.

**Measures of Skewness-** It tell us the direction & extent of asymmetry in a series. Absolute measure of skewness and relative measure of skewness.

- Skewness can be measured in absolute terms by taking the difference between mean & mode in same unit. Absolute Skewness=  $x - \text{mode}$ ,  $x > \text{mode}$ = positive skewed ,  $x < \text{mode}$ = negative skewed
- If the absolute differences were expressed in relation to some measure of the spread of values in their respective distributions the measures would be relative.

#### Four important measures of relative skewness are as follows-

- 1) Karl Pearson co efficient of skewness
- 2) The bowley's coefficient of skewness
- 3) The Kelley's coefficient of skewness.
- 4) Measure of skewness based on moments

**1) Karl Pearson co efficient of skewness-** also known as **PEARSONIAN COEFFICIENT**. Developed by Karl Pearson. It is based upon the difference between mean & mode & is divided by standard deviation to give a relative measure.  $Sk_p = \frac{\text{mean} - \text{mode}}{\text{sd}}$

- > Mean= median= mode- coefficient of Skewness is 0
- > Mean> median> mode- positive coefficient of skewness
- > Mean<median<mode - negative coefficient of skewness
- > Moderately skewed distribution- mode=  $3\text{median} - 2\text{mean}$

**2) Bowley's coefficient of skewness-** Prepared By Bowley's, it is based on quartiles, quartiles measures of skewness.  $Sk_b = \frac{q_3 + q_1 - 2\text{median}}{q_3 - q_1}$ . Its value lies between -1 to 1. It is useful in open end distributions and extreme values. Bowley's measure values is limited between -1 and 1 while Pearson measures as no such limit.

**3) Kelley's coefficient of skewness-**It is based on the formula for measuring skewness that is based upon the 10th deciles & 90th percentiles. Percentiles  $Sk_k = \frac{p_{90} + p_{10} - 2\text{median}}{p_{90} - p_{10}}$ . Deciles  $Sk_k = \frac{d_1 + d_9 - 2\text{median}}{d_9 - d_1}$

#### MOMENTS:

**Moments** are the general statistical measures used to describe and analyse the characteristics of a frequency distribution. There are three basis for defining moments:

1. Moments about the Mean.
  2. Moments about Assumed Mean.
  3. Moments about zero.
- Moment is refers to the measure of force with respect to its tendency to provide rotation. The strength of tendency depends on the amount of force and the distance from the origin of the point at which the force is exerted.
  - Moment=  $\sum fx/n$  , f= force, x= distance.

Suppose I give you this list of 5 numbers:

{1, 2, 2, 6, 9}

The mean of these five numbers is

$$(1 + 2 + 2 + 6 + 9)/5 = 4$$

The mean is also called the first moment.

The mean of the squares of the five numbers is

$$(1 + 4 + 4 + 36 + 81)/5 = 25.2.$$

The mean of the squares is called the second moment.

The mean of the cubes of the five numbers is

$$(1 + 8 + 8 + 216 + 729)/5 = 192.4.$$

The mean of the cubes is called the third moment.

**Let us 'center' the list by subtracting the mean from each of the 5 numbers. Now the list looks like**

$$\{-3, -2, -2, 2, 5\}.$$

The mean of the centered list is 0 (obvious).

The mean of the squares of the centered list is

$$(9 + 4 + 4 + 4 + 25)/5 = 9.2.$$

That's the second central moment.

The mean of the cubes of the centered list is.

$$(-27 - 8 - 8 + 8 + 125)/5 = 18.$$

That's the third central moment.

**Using this example, you can understand moments for random variables.**

If you have a random variable X:

First moment (the mean) is the expected value of X:

$$E[X]$$

Second moment is the expected value of  $X^2$ :

$$E[X^2]$$

Third moment is the expected value of  $X^3$ .

$$E[X^3]$$

etc.

You can 'center' X by subtracting its mean:

$$X - E[X]$$

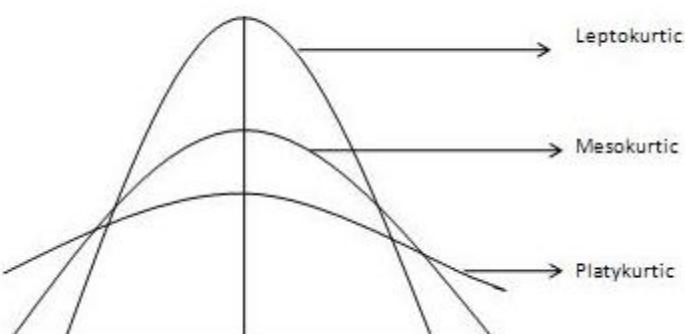
Second central moment (variance) is expected value of  $(X - E[X])^2$ .

Third central moment (variance) is expected value of  $(X - E[X])^3$ .

etc.

### KURTOSIS:

The degree of flatness or peakedness is measured by kurtosis. It tells us about the extent to which the distribution is flat or peak vis-a-vis the normal curve. Diagrammatically, shows the shape of three different types of curves.



The normal curve is called Mesokurtic curve. If the curve of a distribution is more peaked than a normal or mesokurtic curve then it is referred to as a Leptokurtic curve. If a curve is less peaked than a normal curve, it is called as a platykurtic curve. Kurtosis is measured by moments and is given by the following formula:

#### Formula

$$\beta_2 = \frac{\mu_4}{\mu_2^2}$$

Where –

- $\mu_4 = \sum (x - \bar{x})^4 N$

**The greater the value of  $\beta_2$  the more peaked or leptokurtic the curve. A normal curve has a value of 3, a leptokurtic has  $\beta_2$  greater than 3 and platykurtic has  $\beta_2$  less than 3.**

#### POINTS TO REMEMBER-(KURTOSIS)

- It is a Greek word means bulginess.
- It refers to the degree of flatness or Peakedness in the region about the mode of a frequency curve.
- If a curve is more peaked than a normal curve- leptokurtic
- If a curve is more flat topped than the normal curve- Platykurtic
- The normal curve- Mesokurtic
- The condition of Peakedness or flat Toppedness itself is known as kurtosis or excess.

#### THEORETICAL DISTRIBUTIONS:-

##### BINOMIAL DISTRIBUTIONS:

When you flip a coin, there are two possible outcomes: heads and tails. Each outcome has a fixed probability, the same from trial to trial. In the case of coins, heads and tails each have the same probability of 1/2. More generally, there are situations in which the coin is biased, so that heads and tails have different probabilities. In the present section, we consider probability distributions for which there are just two possible outcomes with fixed probabilities summing to one. These distributions are called binomial distributions.

##### POINTS TO REMEMBER:

- It is also known as Bernoulli distribution.
- Developed by Jacob Bernoulli.
- Binomial distribution is probably distribution expressing the probability of one set of dichotomous alternatives i.e. success or failure
- The mean of Binomial distribution is  $np$  & standard deviation  $\sqrt{npq}$  ( $p$ = success,  $q$ = failure)
- Mean of binomial distribution =  $np$
- Standard deviation of binomial distribution=  $\sqrt{npq}$
- Variance of binomial distribution=  $npq$

##### POSSION DISTRIBUTION:

The Poisson distribution can be used to calculate the probabilities of various numbers of "successes" based on the mean number of successes. In order to apply the Poisson distribution, the various events must be independent. Keep in mind that the term "success" does not really mean success in the traditional positive sense. It just means that the outcome in question occurs.

Suppose you knew that the mean number of calls to a fire station on a weekday is 8. What is the probability that on a given weekday there would be 11 calls? This problem can be solved using the following formula based on the Poisson distribution:

$$p = \frac{e^{-\mu} \mu^x}{x!}$$

**e** is the base of natural logarithms (2.7183)

**μ** is the mean number of "successes"

**x** is the number of "successes" in question

For this example,

$$p = \frac{e^{-8} 8^{11}}{11!} = 0.072.$$

since the mean is 8 and the question pertains to 11 fires.

The mean of the Poisson distribution is  $\mu$ . The variance is also equal to  $\mu$ . Thus, for this example, both the mean and the variance are equal to 8.

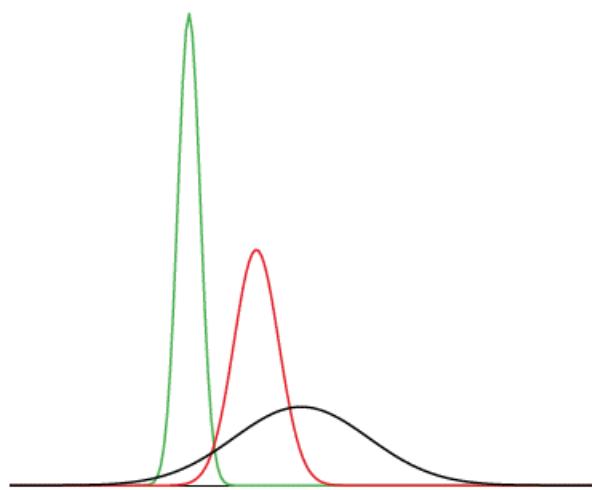
#### PONITS TO REMEMBER:

- It is a discrete probability distribution & is very widely used in statistical work.
- Originated by Simeon Denis Poisson.
- It deals with counting the number of occurrence of a particular event in a specific time interval or region or space.
- Mean of poisson distribution =  $m$
- Standard deviation of poisson distribution =  $\sqrt{m}$  or  $\mu = m$
- Mean and variance is  $(m, m)$

#### NORMAL DISTRIBUTION:

The normal distribution is the most important and most widely used distribution in statistics. It is sometimes called the "bell curve," although the tonal qualities of such a bell would be less than pleasing. It is also called the "Gaussian curve" after the mathematician Karl Friedrich Gauss. As you will see in the section on the history of the normal distribution, although Gauss played an important role in its history, Abraham de Moivre first discovered the normal distribution.

Strictly speaking, it is not correct to talk about "the normal distribution" since there are many normal distributions. Normal distributions can differ in their means and in their standard deviations. Figure 1 shows three normal distributions. The green (left-most) distribution has a mean of -3 and a standard deviation of 0.5, the distribution in red (the middle distribution) has a mean of 0 and a standard deviation of 1, and the distribution in black (right-most) has a mean of 2 and a standard deviation of 3. These as well as all other normal distributions are symmetric with relatively more values at the center of the distribution and relatively few in the tails.

**Figure: Normal distributions differing in mean****and standard deviation.**

The density of the normal distribution (the height for a given value on the x axis) is shown below. The parameters  $\mu$  and  $\sigma$  are the mean and standard deviation, respectively, and define the normal distribution. The symbol e is the base of the natural logarithm and  $\pi$  is the constant pi.

$$\frac{1}{\sqrt{2\pi\sigma^2}} e^{-\frac{(x-\mu)^2}{2\sigma^2}}$$

Since this is a non-mathematical treatment of statistics, do not worry if this expression confuses you. We will not be referring back to it in later sections.

Seven features of normal distributions are listed below. Normal distributions are symmetric around their mean.

- ⊕ The mean, median, and mode of a normal distribution are equal.
- ⊕ The area under the normal curve is equal to 1.0.
- ⊕ Normal distributions are denser in the center and less dense in the tails.
- ⊕ Normal distributions are defined by two parameters, the mean ( $\mu$ ) and the standard deviation ( $\sigma$ ).
- ⊕ 68% of the area of a normal distribution is within one standard deviation of the mean.
- ⊕ Approximately 95% of the area of a normal distribution is within two standard deviations of the mean.

#### **POINTS TO REMEMBER:**

- The normal distribution also called the Normal Probability Distribution happens to be most useful theoretical distribution for continuous variables.
- It was first discovered by De Moivre. It was also known to be Laplace, it has been credited to Karl Gauss.
- The normal distribution is also known as Gaussian distribution (Gaussian law of error).
- Topography of Normal distribution is given by W J YODEN .
- The type of random variable which can take an infinite number of values is called a continuous random variable & the probability distribution of such a variable is called continuous probability distribution.
- Normal distribution is one of the versatile continuous probability distribution.

#### **Properties of Normal distribution are as follows-**

1) The normal curve is symmetrical about the mean (Skewness=0). If the curve were folded along its vertical axis the two halves would coincide. The number of cases below the mean in a normal distribution is equal to the number of cases above the mean, which makes the mean and median coincide.

2) The height of normal curve is at its maximum at the mean. Hence the mean & mode of the normal distribution coincide. Thus mean, median & mode all are equal.

3) There is one maximum point of the normal curve which occurs at the mean. The height of the curve declines as we go in either direction from the mean. The curve approaches nearer and nearer to the base but it never touches it i.e. the curve is asymptotic to the base on either side. Hence its range is unlimited or infinite in both directions.

4) There is only one maximum point, the normal curve is unimodal i.e. it has only one mode.

5) The points of inflexion i.e. the point where the change in curvature occurs are  $x = \pm\sigma$

6) The first and third quartiles are equidistant from the median.

7) The mean deviation is  $4/5$ th or more precisely 0.7979 of the standard deviation.

8) Area under normal curve

> Mean  $\pm 1\sigma = 68.27\%$ , Mean  $\pm 2\sigma = 95.45\%$ , Mean  $\pm 3\sigma = 99.73\%$ ,  $1.96\sigma = 95\%$ ,  $2.5758\sigma = 99\%$

> Coefficient of skewness is 0

> Coefficient of kurtosis is 3 mesocratic.

> Since the mean= median= mode=  $\mu$  the ordinate at  $x=\mu$  divides the whole into two equal parts. Further since total area under normal probability curve is 1. The area to the right ordinate as well as to the left of ordinate at  $x=\mu$  is 1 ( $0.5+0.5$ )

> No question of the curve lies below the x-axis since the probability can never be negative.

> The range of probability distribution is from  $-\infty$  to  $\infty$  but practically  $6\sigma$ .

> All odds moments of normal distribution is zero  $\mu_{2n+1}=0$ .

> Point of inflexion of the normal curve are at  $x = \pm\mu\sigma$ , they are equidistant from mean at a distant of standard deviation.

> Standard normal distribution or standard normal variance  $z = (x - \mu)/\sigma$ ,  $x$ = sample mean,  $\mu$ = population mean,  $\sigma$ = standard deviation.

#### **> Properties of probability for a normal distribution are:**

1)  $P(x) = \frac{1}{\sqrt{2\pi}\sigma} e^{-(x-\mu)^2/2\sigma^2}$

2) Mean and variance is  $(0,1)$  a normal curve with 0 mean & unit standard deviation is known as the standard normal curve.

#### **Sampling Theory**

Samples are parts of a population. For example, you might have a list of information on 100 people (your "sample") out of 10,000 people (the "population"). You can use that list to make some assumptions about the entire population's behavior.

However, it's not that simple. When you do stats, your sample size has to be ideal—not too large or too small. Then once you've decided on a sample size, you must use a sound technique to collect the sample from the population.

➤ **Data:** Data are observations that have been collected

- **Population:** The entire group of individuals is called the population. It is a totality of statistical data forming a subject of an investigation or the complete collection of all elements to be studied.
- **Sample:** Usually populations are so large that a researcher cannot examine the entire group. Therefore, a sample is selected to represent the population in a research study. It is a portion of population or a sub-collection of elements, which is examined with a view to estimating the characteristics of a population.
- **Parameter:** It is a characteristic of a population based on all the units of the population or a numerical measurement describing some characteristics of a population. It is also called population values.
- **Statistics:** It can be defined as a collection of methods for planning experiments, obtaining data, and then organizing, summarizing, presenting, analyzing, interpreting, and drawing conclusions based on the data. It is a numerical measurement describing some characteristics of a sample.

**Probability Sampling** uses randomization to select sample members. You know the probability of each potential member's inclusion in the sample. For example, 1/100. However, it isn't necessary for the odds to be equal. Some members might have a 1/100 chance of being chosen, others might have 1/50.

**Non-probability sampling** uses non-random techniques (i.e. the judgment of the researcher). You can't calculate the odds of any particular item, person or thing being included in your sample.

#### Common Types:

**Bernoulli samples** have independent Bernoulli trials on population elements. The trials decide whether the element becomes part of the sample. All population elements have an equal chance of being included in each choice of a single sample. The sample sizes in Bernoulli samples follow a binomial distribution.  
**Poisson samples (less common):** An independent Bernoulli trial decides if each population element makes it to the sample.

**Cluster samples** divide the population into groups (clusters). Then a random sample is chosen from the clusters. It's used when researchers don't know the individuals in a population but do know the population subsets or groups.

In **systematic sampling**, you select sample elements from an ordered frame. A sampling frame is just a list of participants that you want to get a sample from. For example, in the equal-probability method, choose an element from a list and then choose every  $k$ th element using the equation  $k = N/n$ . Small "n" denotes the sample size and capital "N" equals the size of the population.

**SRS :** Select items completely randomly, so that each element has the same probability of being chosen as any other element. Each subset of elements has the same probability of being chosen as any other subset of  $k$  elements.

In **stratified sampling**, sample each subpopulation independently. First, divide the population into homogeneous (very similar) subgroups before getting the sample. Each population member only belongs to one group. Then apply simple random or a systematic method within each group to choose the sample.  
**Stratified Randomization:** a sub-type of stratified used in clinical trials. First, divide patients into strata, then randomize with permuted block randomization.

**Acceptance-Rejection Sampling:** A way to sample from an unknown distribution using a similar, more convenient distribution.

**Accidental sampling (also known as grab, convenience or opportunity sampling):** Draw a sample from a convenient, readily available population. It doesn't give a representative sample for the population but can be useful for pilot testing.

**Adaptive sampling** (also called response-adaptive designs): adapt your selection criteria as the experiment progresses, based on preliminary results as they come in.

**Bootstrap Sample:** Select a smaller sample from a larger sample with Bootstrapping. Bootstrapping is a type of resampling where you draw large numbers of smaller samples of the same size, with replacement, from a single original sample.

The **Demon algorithm** (physics) samples members of a microcanonical ensemble (used to represent the possible states of a mechanical system which has an exactly specified total energy) with a given energy. The "demon" represents a degree of freedom in the system which stores and provides energy.

**Critical Case Samples:** With this method, you carefully choose cases to maximize the information you can get from a handful of samples.

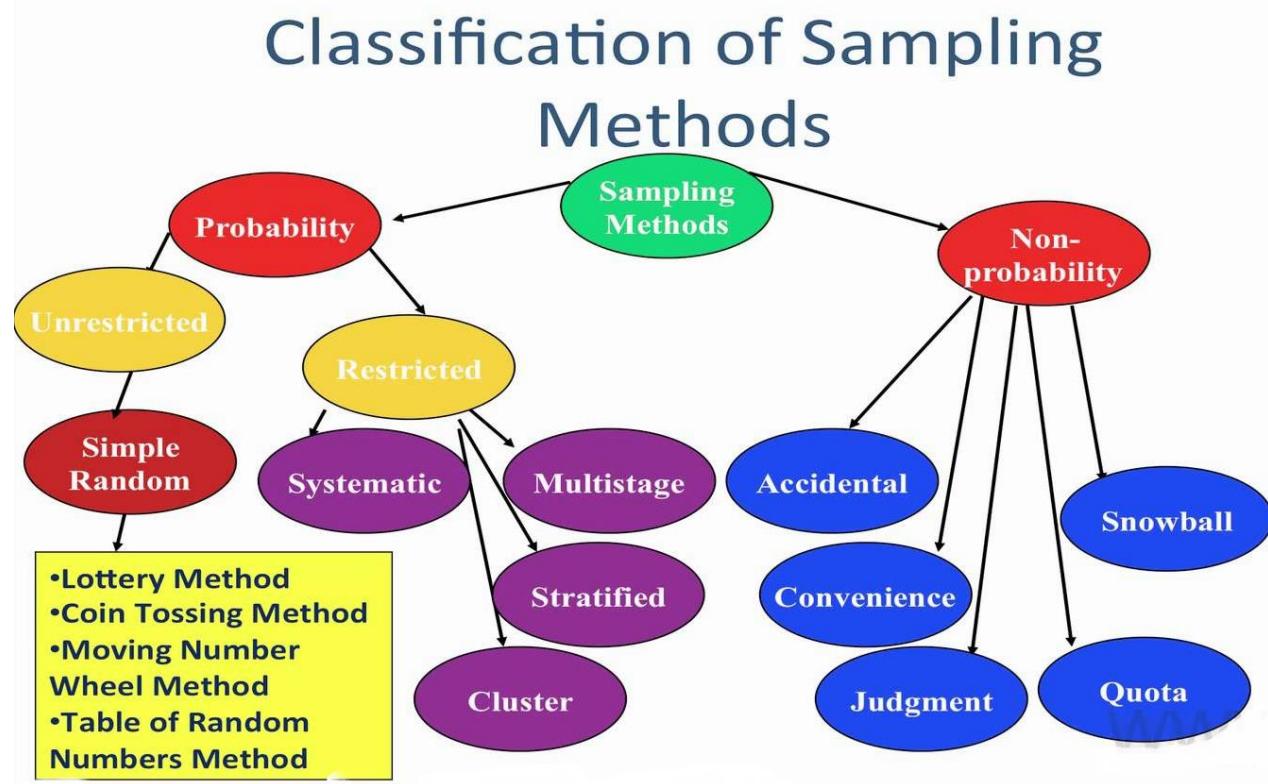
**Discrepant case sampling:** you choose cases that appear to contradict your findings.

**Distance sample :** a widely used technique that estimates the density or abundance of animal populations.

The **experience sampling** method samples experiences (rather than individuals or members). In this method, study participants stop at certain times and make notes of their experiences as they experience them.

**Haphazard Sampling:** where a researcher chooses items haphazardly, trying to simulate randomness. However, the result may not be random at all — tainted by selection bias.

#### TYPES OF SAMPLING:



The methods of selecting a sample out of a given population is called sampling. There are various methods of selecting sample from a population in accordance with various needs.

#### A. Probability Sampling Methods:

1. Simple Random Sampling.
2. Stratified Random Sampling.
3. Systematic Random Sampling.
4. Multistage Random Sampling.
5. Cluster Sampling.

#### B. Non-Probability Sampling Methods:

1. Judgement Sampling.

2. Quota Sampling.
3. Convenience Sampling.
4. Extensive Sampling.

#### A. PROBABILITY SAMPLING METHODS:

Probability sampling methods are such methods of selecting a sample from the population in which all units of the universe are given equal chances of being included in the sample. There are various variants of probability sampling methods, which are given below:

1. **Simple Random Sampling:** Random sampling is one of the simplest forms of collecting data from the total population. Under random sampling, each member of the subset carries an equal opportunity of being chosen as a part of the sampling process. For example, the total workforce in organisations is 300 and to conduct a survey, a sample group of 30 employees is selected to do the survey. In this case, the population is the total number of employees in the company and the sample group of 30 employees is the sample. Each member of the workforce has an equal opportunity of being chosen because all the employees which were chosen to be part of the survey were selected randomly. But, there is always a possibility that the group or the sample does not represent the population as a whole, in that case, any random variation is termed as a sampling error.

An unbiased random sample is important for drawing conclusions. For example when we took out the sample of 30 employees from the total population of 300 employees, there is always a possibility that a researcher might end up picking over 25 men even if the population consists of 200 men and 100 women. Hence, some variations when drawing results can come up, which is known as a sampling error. One of the disadvantages of random sampling is the fact that it requires a complete list of population. For example, if a company wants to carry out a survey and intends to deploy random sampling, in that case, there should be total number of employees and there is a possibility that all the employees are spread across different regions which make the process of survey little difficult.

2. **Stratified Random Sampling:** This method is used when units of the universe are heterogeneous rather than homogeneous. Under this method, first of all units of the population are divided into different strata in accordance with their characteristics. Therefore by using random sampling, sample items are selected from each stratum. For example, if 150 students are to be selected out of 1500 students of a college, then firstly the college students will be divided into three groups on the basis of Arts, Commerce & science. Suppose there are 500, 700, 300 students respectively in three faculties & 10% sample is to be taken, then on the basis of random sampling 50, 70, & 30 students respectively will be selected by using random sampling. Thus, this method assumes equal representation to each class or group & all the units of the universe get equal chance of being selected in the sample.

3. **Systematic Random Sampling:** In this method, all the items of the universe are systematically arranged and numbered and then sample units are selected at equal intervals. For example, if 5 out of 50 students are to be selected for a sample, then 50 students would be numbered and systematically arranged. One item of the 1<sup>st</sup> 10 would be selected at random. Subsequently, every 10<sup>th</sup> item from the selected number will be selected to frame a sample. If the 1<sup>st</sup> selected number is 5<sup>th</sup> item, then the subsequent numbers would be 15<sup>th</sup>, 25<sup>th</sup>, 35<sup>th</sup>, & 45<sup>th</sup>.

4. **Multistage Random Sampling:** When sampling procedure passes through many stages, then it is known as multi-stage sampling. In this method, firstly the entire universe or population is divided into stages or substages. From the each stage some units are selected on random sampling basis. Thereafter these units are subdivided and on the basis of random sampling again some sub-units are selected. Thus, this goes on with sub-division further and selection on. For example, If the government wants to take a sample of 10,000 households residing in Gujarat state. At the first stage, the state can be divided into the number districts, and then few districts can be selected randomly. At the second-stage, the chosen districts can be further sub-divided into the number of villages and then the sample of few villages can be taken at random. Now at the third-stage, the desired number of households can be selected from the villages chosen at the second stage. Thus, at each stage the size of the sample has become smaller and the research study has become more precise.

5. **Cluster Sampling:** It is also known as area sampling. In this type of sampling we make groups out of heterogeneous data and then select the groups randomly. In other words, in cluster sampling the universe is divided into many groups called cluster & out of which a few clusters are selected on random

basis & then the clusters are complete enumerated. This method is usually applied in industries like as in pharmaceutical industry, a machine produces medicines tables in the batches of hundred each, then for quality inspection, a few randomly selected batches are examined.

**A. Non-Probability Sampling Methods:** Non-probability sampling methods are those methods in which selection of the units is made on the basis of convenience or judgement of the investigator rather than on the basis of probability or chance. In such methods, selection of units is made in accordance with the specific objectives & convenience of the investigator.

**1. Judgement Sampling:** In this type of sampling we collect our sample on the basis of experience, expert knowledge and accordingly to judge. For example, if a sample of 20 students is to be selected from a class of 80 students for analyzing the spending habits of the 10 students, the investigator would select 20 students, who in his opinion are representative of the class.

**2. Quota Sampling:** In this type of sampling quota is fixed for every enumerators and they have to collect the sample by using any biased method. In other words, the investigator are assigned definite quotas according to some criteria. They are instructed to obtain the required number to fill in each quota. The investigators select the individuals to collect information on their personal judgements within the quotas. When all or part of the whole quota is not available, the quota is completed by supplementing new responds. Quota sampling is a type of judgement sampling.

**3. Convenience sampling:** It is also known as **Chunk Sampling, Incidental Sampling** and in this type of sampling we get the sample in a convenient way from collections and guidance. For example, a book publisher selects some teachers conveniently on the basis of the list of the teachers from the college prospectus & gets feedback from them regarding his publication. This method is less expensive & more sample but is unscientific & unreliable. This method results in more dependence on the enumerators. This method is appropriate for sample selection where the universe or population is not clearly defined or list of the units is not available or sample units are not clear in themselves.

**4. Extensive sampling:** In this method, sample size is taken almost as big as the population itself like 90% the section of the population. Only those units are left out for which data collection is very difficult or almost impossible. Due to very large sample size, the method has greater level of accuracy.

### SAMPLING & NON-SAMPLING ERRORS

The choice of a sample through may be made with utmost care, involves certain errors which may be classified into two types:

- + Sampling Errors
- + Non-Sampling Errors

These errors may occur in the collection, processing and analysis of data.

**1. Sampling Errors:** The Sampling Error refers to the statistical error occurred when the subset of the population (sample) deviates from the true characteristics, attributes and behavior of the total population. Simply, when the sample selected from the population differs from the actual attributes of the target population, then the sampling error arises.

**Sampling errors arise primarily due to the following reasons:**

- + Faulty selection of the sampling methods.
- + Substituting one sample for the sample due to the difficulties in collecting the sample.
- + Faulty demarcation of sampling units.
- + Variability of the population which has different characteristics.

**2. Non-Sampling Errors:** non-sampling errors are those which creep in due to human factors which always varies from one investigator to another. These errors arise due to any of the following factors:

- + Faulty planning.
- + Faulty selection of the sample units.
- + Lack of trained & experienced staff which collect data.
- + Errors due to wrong statistical measures.
- + Framing of a wrong questionnaire.

### TESTS OF HYPOTHESIS:

The main objective of the sampling theory is the study of the Tests of Hypothesis or Tests of Significance. In many circumstances, we are to make decisions about the population on the basis of only sample information.

In attempting to arrive at decisions about the population on the basis of sample information, it is necessary to make assumption about the population parameters involved. Such an assumption or statement is called a statistical hypothesis which may or may not be true.

**There are two types of hypothesis:**

1. **Null hypothesis:** Null Hypothesis is the hypothesis which is tested for possible rejection under the assumption that it is true. It is denoted by  $H_0$ . The null hypothesis asserts that there is no difference between the sample statistic and the population parameter & wherever the observed difference is there, is merely due to fluctuations in sampling from the same population. For example, if we want to test the hypothesis that the mean of the population to be taken as  $\mu_0$ , then the null hypothesis ( $H_0$ ) is  $\mu=\mu_0$ .
2. **Alternative Hypothesis:** Alternative Hypothesis is any hypothesis which is complementary to the null hypothesis. It is very important to explicitly state the alternative hypothesis in respect of any Null Hypothesis  $H_0$ , because the acceptance or rejection of  $H_0$  is meaningful only if it is being tested against a rival hypothesis. In short any hypothesis different from the null hypothesis is called an alternative hypothesis.

**TYPE 1 & TYPE 2 ERROR:** In the process of hypothesis testing we usually come across same sort of errors, called errors in hypothesis testing which are grouped in two types:

**Type 1 Error:** Type 1 errors are made when we reject the null hypothesis though it is true.

**Type 2 Error:** Type 2 errors are made when we accept the null hypothesis though it is false.

**Level of Significance:** This refers to the degree of significance with which we accept or reject a particular hypothesis. Since 100% accuracy is not possible in taking a decision over the acceptance or rejection of a hypothesis, we have to take the decision at a particular level of confidence which would speak of the probability of one being correct or wrong in accepting or rejecting a hypothesis. In most of the cases of hypothesis testing, such a confidence is fixed at 5% level, which implies that our decision would be correct to the extent of 95%. For a greater precision, however, such a confidence may be fixed at 1% level which would imply that the decision would be correct to the extent of 99%. This level is usually denoted by the symbol,  $\alpha$  (alpha) which represents the probability of committing the type 1 error (i.e. rejecting a null hypothesis which is true). The level of confidence or significance is always fixed in advance before applying the test procedures. It is important to note that if no level of significance is given, then we always take  $\alpha=0.05$ .

**Critical Region or Rejection Region:** The critical region or rejection region is the region of the standard normal curve corresponding to a pre-determined level of significance. The region under the normal curve which is not covered by the rejection region is known as Acceptance region. Thus, the statistic which leads to the rejection of null hypothesis  $H_0$  gives us a region known as Rejection Region or Critical Region. While those which lead to acceptance of  $H_0$  give us a region called as acceptance region.

**One Tailed Test & Two Tailed Test:** A test of any statistical hypothesis where the alternative hypothesis is expressed by the symbol ( $<$ ) or the symbol ( $>$ ) is called a one-tailed test since the entire critical region lies in one tail of the distribution of the test statistic. The critical region for all alternative hypotheses containing the symbol ( $>$ ) lies entirely on the right tail of the distribution while the critical region for an alternative hypothesis containing a less than ( $<$ ) symbol lies entirely in the left tail. The symbol indicates the direction where the critical region lies. A test of any statistical hypothesis where the alternative is written with a symbol  $\neq$  is called a two-tailed test, since the critical region is split into two equal parts, one in each tail of the distribution of the test statistic.

**Critical Value:** The critical values of the standard normal variate (Z) for both the two-tailed & one-tailed tests at different levels of significance are very often required in hypothesis testing. The following table gives critical values for both one-tailed & two-tailed tests at various levels of significance.

Level of significance ( $\alpha$ )	$\alpha=0.10$	$\alpha=0.05$	$\alpha=.01$	$\alpha = .005$
Critical values of Z (for one tailed test)	-1.28 or + 1.28	-1.645 or + 1.645	-2.33 or + 2.33	-2.58 or + 2.58
Critical values of Z (for two tailed test)	-1.645 or + 1.645	-1.96 or + 1.96	-2.58 or + 2.58	-2.81 or + 2.81

### Small Sampling Tests:

**T-test:** t-test is a small sample test. It was developed by William Gosset in 1908. He published this test under the pen name of "Student". Therefore, it is known as Students t-test.

T-TEST is any statistical hypothesis test in which the test statistics follows a student T Distribution if the Null Hypothesis is supported. It can be used to determine if two sets of data are significantly different from each other & is most commonly applied when the statistics would follow a normal distribution if the value of a sampling term in the test statistics were known.

#### Uses of t-test:

- + Test of hypothesis about the population.
- + Test of hypothesis about the difference between the two means in case of independent samples.
- + Test of hypothesis about the difference between two means with dependent samples.
- + Test of hypothesis about an observed coefficient of correlation.

It is usual first to formulate a null hypothesis, which states that there is no effective difference between the observed sample mean and the hypothesized or stated population mean—i.e., that any measured difference is due only to chance. In an agricultural study, for example, the null hypothesis could be that an application of fertilizer has had no effect on crop yield, and an experiment would be performed to test whether it has increased the harvest. In general, a t-test may be either two-sided (also termed two-tailed), stating simply that the means are not equivalent, or one-sided, specifying whether the observed mean is larger or smaller than the hypothesized mean. The test statistic t is then calculated. If the observed t-statistic is more extreme than the critical value determined by the appropriate reference distribution, the null hypothesis is rejected. The appropriate reference distribution for the t-statistic is the t distribution. The critical value depends on the significance level of the test (the probability of erroneously rejecting the null hypothesis).

#### Z-test:

Z test is a statistical procedure used to test an alternative hypothesis against a null hypothesis.

Z-test is any statistical hypothesis used to determine whether two samples' means are different when variances are known and sample is large ( $n \geq 30$ ).

It is Comparison of the means of two independent groups of samples, taken from one populations with known variance

Formula to find the value of Z (z-test) Is:

$$Z = \frac{\bar{x} - \mu_0}{\sigma/\sqrt{n}}$$

$\bar{x}$  = mean of sample

$\mu_0$  = mean of population

$\sigma$  = standard deviation of population

$n$  = no. of observations

#### WHY WE USE LARGE SAMPLE...

When we perform a statistical test we are trying to judge the validity of the null hypothesis. We are doing so with an incomplete view of the population. Our sample is our window into the population. The larger the

sample size the bigger our window. However without a full view of the population there is always the chance that our sample will lead us to the wrong conclusion.

#### **When do we use Z-Test**

**When samples are drawn at random.**

**When the samples are taken from population are independent.**

**When standard deviation is known.**

**When no. of observation is large ( $n \geq 30$ )**

#### **PONITS TO REMEMBER:**

**Z- test is also known as Standard Normal Variable Test Or Standard Normal Deviate Test.**

**Conditions for applying z test-**

- 1)  $N > 30$
- 2)  $N \leq 30$ , standard deviation of population mean is given.

$Z = \text{mean} - \mu/\sigma/\sqrt{n}$ . or  $\mu/\sigma$  / S.E (Standard Error).

**Conditions for acceptance and rejection of Null Hypothesis:**

- 1) If table value > calculated value, we accept the hypothesis.
  - 2) If table value < calculated value, we reject the hypothesis
- + 1.96 - 5% confidence interval.
  - + Location tests are the most familiar Z- Test.
  - + Z- Test is also known as Standard Normal Test, Approximate Test, And Large Sample Test.

**F-Test:** F-test is named after the greater statistician R.A.Fisher. F-test is used to test whether the two independent estimates of population variance differ significantly or whether the two samples may be regarded as drawn from the normal population having the same variance. F test never be in negative because of square and numerator is always greater than denominator.

**Conditions For Applying F- Test Is:-**

- 1) Population mean, sample mean & standard deviation not given in the question.
- 2) Will talk about two sample mean
- 3) Lies 0 to  $\infty$
- 4) It is one tailed test.

**Chi-Square test:** The Chi-Square test is an important test amongst several tests of significance developed by the statisticians is. A chi-squared test, also written as  $\chi^2$  test, is any statistical hypothesis test where the sampling distribution of the test statistic is a chi-squared distribution when the null hypothesis is true. Without other qualification, 'chi-squared test' often is used as short for Pearson's chi-squared test. The chi-squared test is used to determine whether there is a significant difference between the expected frequencies and the observed frequencies in one or more categories. As a non-parameter test, it can be used as a test of goodness of fit and as a test of attributes. Thus, the chi-square test is applicable to a very large number of problems in practice.

Chi-squared tests are often constructed from a sum of squared errors, or through the sample variance. Test statistics that follow a chi-squared distribution arise from an assumption of independent normally distributed data, which is valid in many cases due to the central limit theorem. A chi-squared test can be used to attempt rejection of the null hypothesis that the data are independent.

Also considered a chi-squared test is a test in which this is asymptotically true, meaning that the sampling distribution (if the null hypothesis is true) can be made to approximate a chi-squared distribution as closely as desired by making the sample size large enough.

#### POINTS TO REMEMBER:

- + It is introduced by Karl Pearson.
  - + Value of  $\chi^2$  can never be negative.
  - + Pearson's Chi Square Test Also Known As The Chi Square Goodness Of Fit Test & Chi Squared Test For Independence.
  - + Yates Correction For Continuity - To Reduce The Error In Approximation Frank Yates Suggested A Correction For Continuity That Adjusts The Formula For Pearson Chi Squared Test By Subtracting 0.5 From The Difference Between Each Observed Value & Its Expected Value In A  $2 \times 2$  Contingency Table.
  - + Mean of Chi Square =  $v$
  - + Variance of Chi Square =  $v/2$
  - + It is interested in dealing with more than two populations
  - + It enables us to test whether more than two population proportions are equal.
  - + The chi square test distribution is known by its only parameter numbers of degrees of freedom.
  - +  $Df = (\text{row}-1)(\text{column}-1)$
  - + It should be noted that the chi square test only tells us whether two principles of classification are significantly related or not but not measure of the degree or form of relationship.
  - + The arrangement of data according to attributes in cells are called a contingency table.
- Chi square is also known as:-**

- 1) Goodness of fit accumulation
- 2) Contingency table
- 3) Quantitative variables.
- 4) Coefficient of association.

#### Conditions for applying chi square test:-

- 1) Population & sample mean is not given in the question.
  - 2) It talks about degree of freedom.
- + Chi square =  $n.s^2/\sigma^2$
  - + Chi square lies between 0 to  $\infty$
  - + It is a non-parametric test.
  - + One Tailed Test- In this test direction is mentioned ( $<$  or  $>$ ), it is also known as right tailed test (t test and chi square test is one tailed test).
  - + Two Tailed Test- In this direction is not mentioned ( $= \neq$ ) it is also known as left tailed test.

#### Paired-T test

**Paired-T**- Test may be applied to verify the necessity of a costly management training for its sales personnel by recording the sales of the selected trainees before and after the management training or the validity of special coaching for a group of educationally backward students by verifying their progress before & after the coaching programme or the increase in productivity due to the application of a particular kind of fertilizer by recording the productivity of a crop before & after applying this particular fertilizers & so on.

**Paired -T Test is also known as Bivariate Normal Distribution.**

#### PARAMETRIC TEST

### T- Test, F-Test, Z- Test Are Called Parametric Test.

#### **Conditions of parametric tests are as follows: -**

- 1) The population from which the samples have been withdrawn should be normally distributed this is known by the term assumptions of normality
- 2) The variables involved must have been measured in interval or ratio's scale.
- 3) The observations must be independent the inclusions or exclusions of any case in the sample should not unduly affect the results of the study.
- 4) These populations must have the same variance or in special cases must have a known ratio of variance. This is called Homoscedasticity i.e. equal variance.

However in many cases where these above conditions are not met, it is always advisable to make use of non-parametric test for comparing samples and to make inferences or to test the significance or trustworthiness of the computer statistics. In other words the use of non-parametric test is recommended in the following situations-

- 1) Where n is quite small
- 2) When assumptions like normality of the distributions of scores in the population are doubtful. It is the characteristics of non-parametric test which enables them to be called distribution free test.
- 3) When the measurement of data is available either in the form of ordinal or nominal scale.

- ✚ Non-Parametric Test are typically simpler & easier to be carried out, there use should be restricted to those situations in which the required conditions for using parametric test are not met.
- ✚ Non-parametric test are less powerful (less able to detect a true difference when it exists) than parametric test in the same situations.

#### **Non parametric tests are as follows:-**

- 1) Sign test. 2) Median test. 3) Mann Whitney u test. 4) Run test. 5) Ks test. 6) Chi square test.

### ANOVA

Analysis of variance (ANOVA) is a statistical technique that is used to check if the means of two or more groups are significantly different from each other. ANOVA checks the impact of one or more factors by comparing the means of different samples.

We can use ANOVA to prove/disprove if all the medication treatments were equally effective or not.

ANOVA is one of the most powerful techniques of statistical analysis. It was developed by R.A FISHER. Initially, this technique was used in agricultural experiments but now a days it is widely used in natural, social and physical science. This technique is used to test whether the difference between the means of three or more populations is significant or not. By using the technique of analysis of variance, we can test whether the difference varieties of seeds or fertilizers applied on different plots of land differ significantly or not as regard their average yields. A manager of a firm may use this technique to test whether there is significant difference in the average sale figures of different salesmen employed by the firm. Analysis of variance thus enables us to test on the basis of sample observations whether the means of three or more population is significantly different or not.

An ANOVA test is a way to find out if survey or experiment results are significant. In other words, they help you to figure out if you need to reject the null hypothesis or accept the alternate hypothesis. Basically, you're testing groups to see if there's a difference between them. Examples of when you might want to test different groups:

- ✚ A group of psychiatric patients are trying three different therapies: counseling, medication and biofeedback. You want to see if one therapy is better than the others.
- ✚ A manufacturer has two different processes to make light bulbs. They want to know if one process is better than the other.
- ✚ Students from different colleges take the same exam. You want to see if one college outperforms the other.

#### **What Does "One-Way" or "Two-Way Mean?**

One-way or two-way refers to the number of independent variables (IVs) in your Analysis of Variance test. One-way has one independent variable (with 2 levels) and two-way has two independent variables (can have multiple levels). For example, a one-way Analysis of Variance could have one IV (brand of cereal) and a two-way Analysis of Variance has two IVs (brand of cereal, calories).

### What are “Groups” or “Levels”?

Groups or levels are different groups in the same independent variable. In the above example, your levels for “brand of cereal” might be Lucky Charms, Raisin Bran, Cornflakes — a total of three levels. Your levels for “Calories” might be: sweetened, unsweetened — a total of two levels.

Let’s say you are studying if Alcoholics Anonymous and individual counseling combined is the most effective treatment for lowering alcohol consumption. You might split the study participants into three groups or levels: medication only, medication and counseling, and counseling only. Your dependent variable would be the number of alcoholic beverages consumed per day.

If your groups or levels have a hierarchical structure (each level has unique subgroups), then use a nested ANOVA for the analysis.

### What Does “Replication” Mean?

It’s whether you are replicating your test(s) with multiple groups. With a two way ANOVA with replication , you have two groups and individuals within that group are doing more than one thing (i.e. two groups of students from two colleges taking two tests). If you only have one group taking two tests, you would use without replication.

### Types of Tests.

There are two main types: one-way and two-way. Two-way tests can be with or without replication.

- + One-way ANOVA between groups: used when you want to test two groups to see if there's a difference between them.
- + Two way ANOVA without replication: used when you have one group and you're double-testing that same group. For example, you're testing one set of individuals before and after they take a medication to see if it works or not.
- + Two way ANOVA with replication: Two groups, and the members of those groups are doing more than one thing. For example, two groups of patients from different hospitals trying two different therapies.

### One Way ANOVA

A one way ANOVA is used to compare two means from two independent (unrelated) groups using the F-distribution. The null hypothesis for the test is that the two means are equal. Therefore, a significant result means that the two means are unequal.

### When to use a one way ANOVA

**Situation 1:** You have a group of individuals randomly split into smaller groups and completing different tasks. For example, you might be studying the effects of tea on weight loss and form three groups: green tea, black tea, and no tea.

**Situation 2:** Similar to situation 1, but in this case the individuals are split into groups based on an attribute they possess. For example, you might be studying leg strength of people according to weight. You could split participants into weight categories (obese, overweight and normal) and measure their leg strength on a weight machine.

## Two Way ANOVA

A Two Way ANOVA is an extension of the One Way ANOVA. With a One Way, you have one independent variable affecting a dependent variable. With a Two Way ANOVA, there are two independents. Use a two way ANOVA when you have one measurement variable (i.e. a quantitative variable) and two nominal variables. In other words, if your experiment has a quantitative outcome and you have two categorical explanatory variables, a two way ANOVA is appropriate.

For example, you might want to find out if there is an interaction between income and gender for anxiety level at job interviews. The anxiety level is the outcome, or the variable that can be measured. Gender and Income are the two categorical variables. These categorical variables are also the independent variables, which are called factors in a Two Way ANOVA.

The factors can be split into levels. In the above example, income level could be split into three levels: low, middle and high income. Gender could be split into three levels: male, female, and transgender. Treatment groups are all possible combinations of the factors. In this example there would be  $3 \times 3 = 9$  treatment groups.

### Main Effect and Interaction Effect

The results from a Two Way ANOVA will calculate a main effect and an interaction effect. The main effect is similar to a One Way ANOVA: each factor's effect is considered separately. With the interaction effect, all factors are considered at the same time. Interaction effects between factors are easier to test if there is more than one observation in each cell. For the above example, multiple stress scores could be entered into cells. If you do enter multiple observations into cells, the number in each cell must be equal.

Two null hypotheses are tested if you are placing one observation in each cell. For this example, those hypotheses would be:

**H01: All the income groups have equal mean stress.**

**H02: All the gender groups have equal mean stress.**

For multiple observations in cells, you would also be testing a third hypothesis:

**H03: The factors are independent or the interaction effect does not exist.**

An F-statistic is computed for each hypothesis you are testing.

### Assumptions for Two Way ANOVA

- ⊕ The population must be close to a normal distribution.
- ⊕ Samples must be independent.
- ⊕ Population variances must be equal.
- ⊕ Groups must have equal sample sizes.

### What is MANOVA?

Analysis of variance (ANOVA) tests for differences between means. MANOVA is just an ANOVA with several dependent variables. It's similar to many other tests and experiments in that it's purpose is to find out if the response variable (i.e. your dependent variable) is changed by manipulating the independent variable. The test helps to answer many research questions, including:

- ⊕ Do changes to the independent variables have statistically significant effects on dependent variables?

- + What are the interactions among dependent variables?
- + What are the interactions among independent variables?

### Correlation

- + Correlation is a measure of association between two variables. The variables are not designated as dependent or independent.
- + The two most popular correlation coefficients are: Spearman's correlation coefficient rho and Pearson's product-moment correlation coefficient. When calculating a correlation coefficient for ordinal data, select Spearman's technique. For interval or ratio-type data, use Pearson's technique.
- + The value of a correlation coefficient can vary from minus one to plus one. A minus one indicates a perfect negative correlation, while a plus one indicates a perfect positive correlation. A correlation of zero means there is no relationship between the two variables. When there is a negative correlation between two variables, as the value of one variable increases, the value of the other variable decreases, and vice versa.
- + The standard error of a correlation coefficient is used to determine the confidence intervals around a true correlation of zero. If your correlation coefficient falls outside of this range, then it is significantly different from zero. The standard error can be calculated for interval or ratio-type data (i.e., only for Pearson's product-moment correlation).
- + The significance (probability) of the correlation coefficient is determined from the t-statistic. The probability of the t-statistic indicates whether the observed correlation coefficient occurred by chance if the true correlation is zero. In other words, it asks if the correlation is significantly different than zero. When the t-statistic is calculated for Spearman's rank-difference correlation coefficient, there must be at least 30 cases before the t-distribution can be used to determine the probability. If there are fewer than 30 cases, you must refer to a special table to find the probability of the correlation coefficient.

### Regression

- + Simple regression is used to examine the relationship between one dependent and one independent variable. After performing an analysis, the regression statistics can be used to predict the dependent variable when the independent variable is known.
- + The regression line (known as the least squares line) is a plot of the expected value of the dependent variable for all values of the independent variable. Technically, it is the line that "minimizes the squared residuals". The regression line is the one that best fits the data on a scatterplot.
- + Using the regression equation, the dependent variable may be predicted from the independent variable. The slope of the regression line ( $b$ ) is defined as the rise divided by the run. The y intercept ( $a$ ) is the point on the y axis where the regression line would intercept the y axis. The slope and y intercept are incorporated into the regression equation. The intercept is usually called the constant, and the slope is referred to as the coefficient. Since the regression model is usually not a perfect predictor, there is also an error term in the equation.
- + In the regression equation,  $y$  is always the dependent variable and  $x$  is always the independent variable.
- + Here is a way to mathematically describe a linear regression model:  $y = a + bx + e$
- + The significance of the slope of the regression line is determined from the t-statistic. It is the probability that the observed correlation coefficient occurred by chance if the true correlation is zero.
- + Some researchers prefer to report the F-ratio instead of the t-statistic. The F-ratio is equal to the t-statistic squared.
- + The t-statistic is equal to the estimated coefficient divided by its standard error.

Correlation

Regression

- In correlation analysis the **degree and direction** of relationship between the variables are studied.
- If **value of one variable** is known, the value of other variable **cannot** be estimated.
- Correlation coefficient lies **between -1 and 1**.
- Correlation coefficient is independent of change of origin and **scale**.
- With the help of correlation coefficient and standard deviations of **two random variable(X,Y)** regression coefficient can be obtained.

- In regression analysis, the **nature** of relationship is studied.
- If **value of variable** is known, the value of other variable **can** be estimated using the functional relationships.
- Only one regression coefficient can be **greater than 1**.
- Regression coefficient is independent of change of origin **but not of scale**.

### POINTS TO REMEMBER

- ❖ If two quantities vary in such a way that movement in one are accompanied by movements in the other, these quantities are correlated.
- ❖ The correlation analysis refers to the techniques used in measuring the closeness of the relationship between the variables.
- ❖ Correlation analysis deals with the association between two or more variables.
- ❖ Correlation analysis attempts to determine the degree of relationship between variables.
- ❖ Correlation is an analysis of the covariation between two or more variables.
- ❖ Coefficient of correlation is one of the most widely used and also one of the most widely abused in the sense that the correlation measures nothing but the strength of linear relationship and that it does not necessarily imply a cause & effect relationships.
- ❖ Karl Pearson has given the concept of correlation.
- ❖ Correlation denotes from "r"
- ❖ Correlation lies between -1 to 1
- ❖ Correlation analysis help in determining the degree of relationships between two or more variables it does not tell us anything about cause and effect relationships.
- ❖ Correlation does not necessarily imply causation or functional relationship though the existence of causation always implies correlation. It establishes only covariation.
- ❖ Correlation observed between variables that cannot conceivably be casually related is called spurious or nonsense correlation.

### Types of correlation are as follows-

- 1) Positive or negative correlation
- 2) Simple, partial, multiple correlation

### 3) Linear and non-linear correlation

- ❖ **Positive or negative correlation-** If both the variables are varying in the same direction i.e. if as one variable is increasing the other on an average is also increasing it is known as positive correlation. On the other hand if the variables are varying in opposite directions i.e. as one variable is increasing the other is decreasing or vice versa, correlation is said to be negative.
- ❖ **Simple, partial or multiple correlation-** when one, two variables are studied it is a problem of

simple correlation, when three or more variables are studied it is a problem of either multiple or partial correlation. In multiple correlation three or more variables are studied simultaneously.

- ❖ **Linear or non-linear correlation-** if the amount of change in one variable tends to be a constant ratio to the amount of change in the other variable then correlation is said to be linear. Correlation would be called non-linear or curvilinear if the amount of change in one variable does not bear a constant ratio to the amount of change in the other variable.

### METHODS OF STUDYING CORRELATION

Followings are the methods of correlation

- 1) **Scatter diagram method**
- 2) **Graphic method**
- 3) **Karl Pearson coefficient of correlation.**
- 4) **Rank correlation**
- 5) **Concurrent deviation method**
- 6) **Method of least squares**

**1) Scatter diagram method-** The simplest device for ascertaining whether two variables are related is to prepare dot chart called scatter diagram. The greater the scatter of the plotted points on the chart the lesser is the relationship between the two variables. The more closely the points come to a straight line, the higher the degree of relationships.

- ❖ If all the points lie on the straight line falling from the lower left hand corner to the upper right hand, correlation is said to be perfect correlation  $r=+1$
- ❖ If all the points are lying on a straight line rising from upper left hand to the corner right hand correlation is said to be perfect negative  $r=-1$
- ❖ If the plotted points lie on a straight line parallel to the x-axis or in haphazard manner it shows absence of any relationship between the variables and it is called no correlation  $r=0$
- ❖ Perfect positive  $r=+1$ , perfect negative  $= -1$ , positive  $r>0$ , negative  $r<0$ , no correlation  $= 0$ .
- ❖ As much as relationships come closer to zero it is called weak correlation or low degree correlation.
- ❖ As much as relationships come closer to 1 it is called strong correlation or high degree correlation.

**2) Graphic method-** when values are plotted on a graph paper we obtain two curves, one for x variable and another for y variables. If both the curves drawn on the graph are moving in the same direction (either up or down) correlation is said to be positive. On the other hands if the curves are moving in the opposite direction, correlation is said to be negative.

**3) Karl Pearson coefficient of correlation** or product moment coefficient of correlation Karl Pearson method popularly known as Pearsonian co-efficient of correlation.

- ⊕ The Pearsonian co-efficient of correlation is denoted by the symbol  $r$ ,  $r=\sum xy/n\sigma x.\sigma y$ .
- ⊕ This method is to be applied only where the deviations of items are taken from actual means and not from assumed means.
- ⊕ Value of co-efficient of correlation lies between -1 to 1.
- ⊕ The co-efficient of correlation describes not only the magnitude of correlation but also its decision.  $r=\sum xy / \sqrt{\sum x^2} \cdot \sqrt{\sum y^2}$ .
- ⊕ The coefficient of correlation is said to be a measure of covariance between two series. The covariance of two series x & y, covariance =  $\sum xy/n$
- ⊕ In order to find out the value of correlation coefficient, first we calculate covariance & then in order to convert it to a relative measure we divide the covariance by the standard deviation of the two series. The ratio so obtained is called Karl Pearson's coefficient.
- ⊕ Correlation is independent of change of scale & origin.
- ⊕  $R=\sum xy / \sqrt{\sigma x.\sigma y}$ .
- ⊕  $R=\text{cov}(xy)/\sigma x.\sigma y$ .
- ⊕ Probable error =  $P.E.r=0.6745, 1-r^2/\sqrt{n}$
- ⊕ Standard error =  $S.E.R=1-r^2/\sqrt{n}$

Co-efficient of Determination

- ❖ Square of co-efficient of correlation is called co-efficient of determination.
- ❖ Co-efficient of determination=  $r^2$
- ❖  $R^2 = \text{explained variance} / \text{total variance}$ .
- ❖ Co-efficient of determination ( $r^2$ ) means the percentage of variation in the (y) dependent variable which is explained by the independent variable (x).
- ❖  $Y = \infty + \beta x$  where y is dependent variable,  $\infty$  is intercept,  $\beta$  is slope, x is independent variable.
- ❖ Co-efficient of determination lies between 0 and 1.
- ❖  $R^2 = b_{xy} \cdot b_{yx}$
- ❖ The ratio of unexplained variance to total variance is frequently called the co-efficient of non-determination ( $k^2$ )
- ❖ Square root of non-determination is called co-efficient of alienation or k.

**Properties of coefficient of correlation are as follows-**

- 1) The coefficient of correlation lies between -1 to 1.
- 2) The coefficient of correlation is independent of change of scale & origin.
- 3) The coefficient of correlation is the geometric mean of two regression coefficient  $r = \sqrt{b_{xy} \cdot b_{yx}}$
- 4) The degree of relationship between two variable is symmetric  $r_{xy} = r_{yx}$ .

### RANK CORRELATION COEFFICIENT

- ❖ EDWARD SPEARMAN has developed this.
- ❖ Sometimes we are required to examine the extent of association between two ordinary scaled variables such as two rank orderings.
- ❖ A measure to ascertain the degree of association between the ranks of the two variables x and y is called rank correlation.
- ❖ Spearman denotes it by  $p(\rho)$
- ❖  $P = 1 - \frac{c \sum d^2}{n(n^2 - 1)}$

**Features are as follows-**

- 1) The sum of the differences or ranks between two variables shall be zero,  $\sum d = 0$
- 2) It is distribution free or non-parametric
- 3) If ranks are equal then  $p = 1 - \frac{6 \sum d^2}{n(n^2 - 1)} + \frac{m(m^2 - 1)}{12}$ .

### CONCURRENT DEVIATION METHOD

- ❖ It is the simplest method
- ❖ To find out the direction of change of x variables & y variables.
- ❖  $R_c = \pm \sqrt{(2c - n)/n}$
- ❖ C= concurrent deviations
- ❖ When we observe numerical data in relation to time the set of observations so obtained is known as time series.
- ❖ The limits of the population correlation are given by  $r = P.E$

### REGRESSION ANALYSIS

- ❖ It reveals the average relationship between two variables and this make possible estimation or prediction.
- ❖ The meaning of the term regression is the act of returning or going back.
- ❖ The term Regression was first used by Sir Francis Galt on in 1877.
- ❖ The line describing the tendency to regress or going back was called by Galton a Regression line.
- ❖ It is the measure of the average relationship between two or more variables in terms of the original units of the data.
- ❖ To study the functional relationships between the variables and thereby provide a mechanism for

predictions and forecasting.

- ❖ It is a statistical device with the help of which we are in a position to estimate (or predict) the unknown values of one variable from known values of another variables.
- ❖  $Y = a + bx$ ,  $Y$  dependent variable we are trying to predict,  $x$  = independent variable which is used to predict.
- ❖ Geometric mean of two regression co-efficient gives co-efficient of correlation.  $R = \sqrt{b_{xy} \cdot b_{yx}}$
- ❖ Regression is affected by change of scale & independent of change in origin.
- ❖  $R^2 = \sqrt{b_{xy} \cdot b_{yx}}$
- ❖  $R^2 = b_{xy} \cdot b_{yx}$
- ❖  $= \frac{\text{cov}(xy)}{\sigma_x^2 \cdot \text{Cov}(xy) / \sigma_y^2}$
- ❖  $= \frac{\text{cov}^2(xy)}{\sigma_x^2 \cdot \sigma_y^2}$

### PONITS TO REMEMBER

- ❖ Both regression co-efficient will have the same sign i.e. either they will be positive or negative. It is never possible that one of the regression co-efficient is negative & other positive.
- ❖ Since the value of the co-efficient of correlation cannot exceed one, one of the regression co-efficient must be less than one or, in other words, both the regression co-efficient cannot be greater than 1.
- ❖ The coefficient of correlation will have the same sign as that of regression co-efficient i.e. if regression co-efficient have a negative sign,  $r$  will also be negative and if regression coefficient have a positive sign,  $r$  would be positive.
- ❖ Since  $b_{xy} = r \cdot \frac{\sigma_x}{\sigma_y}$  we can find out any of the four values given the other three.
- ❖ Regression coefficient are independent of change of origin but not of scale.
- ❖ When the data represent a sample from a larger population, the least square line is a best estimate of the population regression line. Regression equation of  $x$  on  $y$ ,  $X_c = a + B y$
- ❖ The standard error of estimates measures the dispersion about an average line called the regression line  $s_{yn} = \sqrt{\sum (y - \bar{y})^2 / n}$  or  $s_{yn} = \sigma_y \sqrt{1 - R^2}$ .

### Index Numbers

Index numbers are intended to measure the degree of economic changes over time. These numbers are values stated as a percentage of a single base figure. Index numbers are important in economic statistics. In simple terms, an index (or index number) is a number displaying the level of a variable relative to its level (set equal to 100) in a given base period.

**Index numbers** are intended to study the change in the effects of such factors which cannot be measured directly. Bowley stated that "Index numbers are used to gauge the changes in some quantity which we cannot observe directly". It can be explained through example in which changes in business activity in a nation are not capable of direct measurement but it is possible to study relative changes in business activity by studying the variations in the values of some such factors which affect business activity, and which are proficient of direct measurement.

**Index numbers** are usually applied in statistical device to measure the combined fluctuations in a group related variables. If statistician or researcher wants to compare the price level of consumer items today with that predominant ten years ago, they are not interested in comparing the prices of only one item, but in comparing some sort of average price levels (Srivastava, 1989). With the support of index numbers, the average price of several articles in one year may be compared with the average price of the same quantity of the same articles in a number of different years. There are several sources of 'official' statistics that contain index numbers for quantities such as food prices, clothing prices, housing, and wages.

**Index numbers** may be categorized in terms of the variables that they are planned to measure. In business, different groups of variables in the measurement of which index number techniques are normally used are price, quantity, value, and business activity.

### Types of Index Numbers

**Simple Index Number:** A simple index number is a number that measures a relative change in a single variable with respect to a base. These type of Index numbers are constructed from a single item only.

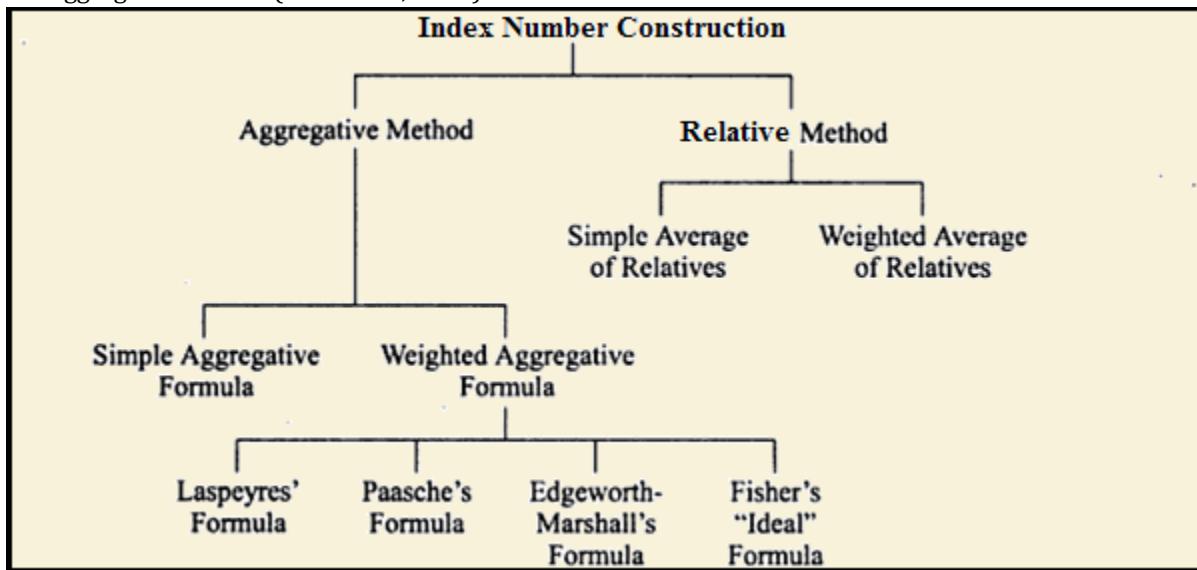
**Composite Index Number:** A composite index number is a number that measures an average relative

changes in a group of relative variables with respect to a base. A composite index number is built from changes in a number of different items.

**Price index Numbers:** Price index numbers measure the relative changes in prices of a commodity between two periods. Prices can be either retail or wholesale. Price index number are useful to comprehend and interpret varying economic and business conditions over time.

**Quantity Index Numbers:** These types of index numbers are considered to measure changes in the physical quantity of goods produced, consumed or sold of an item or a group of items.

Methods of constructing index numbers: There are two methods to construct index numbers: Price relative and aggregate methods (Srivastava, 1989).



In aggregate methods, the aggregate price of all items in a given year is expressed as a percentage of same in the base year, giving the index number.

**Aggregate price in the given year**

$$\text{Index Numbers} = \frac{\text{Aggregate price in the given year}}{\text{Aggregate price in the base year}} \times 100$$

**Relative method:** The price of each item in the current year is expressed as a percentage of price in base year. This is called price relative and expressed as following formula:

**Price in the given year**

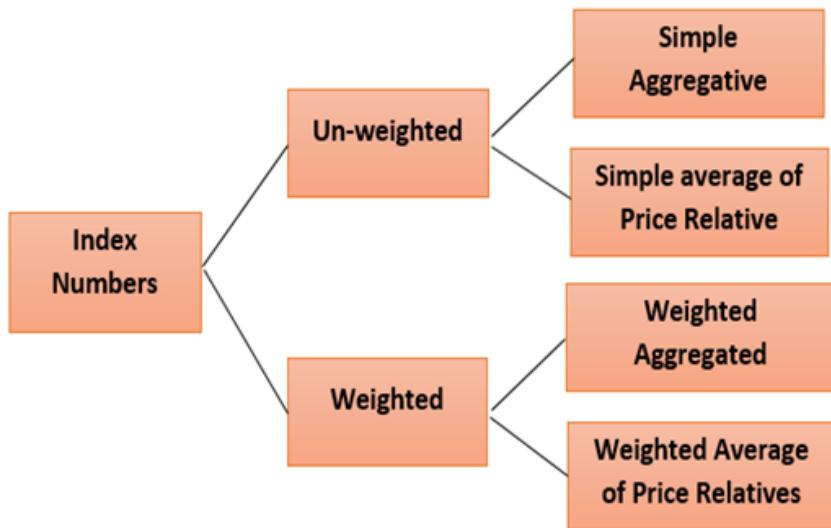
$$\text{Price Relative} = \frac{\text{Price in the given year}}{\text{Price in the base year}} \times 100$$

$$\frac{P_n}{P_0} = \frac{\text{Price in the given year}}{\text{Price in the base year}} \times 100$$

In simple average of relative method, the current year price is expressed as a price relative of the base year price. These price relatives are then averaged to get the index number. The average used could be arithmetic mean, geometric mean or even median.

Weighted index numbers: These are those index numbers in which rational weights are assigned to various chains in an explicit fashion.

Weighted aggregative index numbers: These index numbers are the simple aggregative type with the fundamental difference that weights are assigned to the various items included in the index.



#### **Characteristics of index numbers:**

1. Index numbers are specialised averages.
2. Index numbers measure the change in the level of a phenomenon.
3. Index numbers measure the effect of changes over a period of time.

Uses of Index number: Index numbers has practical significance in measuring changes in the cost of living, production trends, trade, and income variations. Index numbers are used to measure changes in the value of money. A study of the rise or fall in the value of money is essential for determining the direction of production and employment to facilitate future payments and to know changes in the real income of different groups of people at different places and times (Srivastava, 1989). Crowther designated, "By using the technical device of an index number, it is thus possible to measure changes in different aspects of the value of money, each particular aspect being relevant to a different purpose." Basically, index numbers are applied to frame appropriate policies. They reveal trends and tendencies and Index numbers are beneficial in deflating.

Problems associated with index numbers (Srivastava, 1989):

1. **Choice of the base period.**
2. **Choice of an average.**
3. **Choice of index.**
4. **Selection of commodities.**
5. **Data collection.**

To summarize, an index number measures the relative variation in price, quantity, value, or some other item of interest from one time period to another. Index numbers are used to measures all types of quantitative changes in the agricultural, industrial, and commercial fields, as also in such economic magnitudes as income, employment, exports, imports, and prices. Thorough investigation of these changes assists the government to implement appropriate financial measures in order to accomplish growth with firmness. Index numbers are termed as a measure of change, a device to measure change or a series representing the process of change. Index numbers are used as an indicator to indicate the changes in economic activity. They also provide framework for decision making and to predict future events. There are three types of index numbers which are generally used. They are price index, quantity index and value index. These index numbers can be developed either by aggregate method or by average of relative method.

**TIME SERIES ANALYSIS:**

We know that planning about future is very necessary for every business firm, every govt. institute, every individual and for every country. Every family is also doing planning for his income expenditure. As like every business is doing planning for possibilities of its financial resources & sales and for maximization its profit.

**Definition:** "A time series is a set of observation taken at specified times, usually at equal intervals". "A time series may be defined as a collection of reading belonging to different time periods of some economic or composite variables"

Time series establish relation between "cause" & "Effects".

One variable is "Time" which is independent variable & the second is "Data" which is the dependent variable

We explain it from the following example:

Day	No. of Packets of milk sold	Year	Population (in Million)
Monday	90	1921	251
Tuesday	88	1931	279
Wednesday	85	1941	319
Thursday	75	1951	361
Friday	72	1961	439
Saturday	90	1971	548
Sunday	102	1981	685

From example 1 it is clear that the sale of milk packets is decrease from Monday to Friday then again its start to increase.

- Same thing in example 2 the population is continuously increase.

**Importance of Time Series Analysis:-**

As the basis of Time series Analysis businessman can predict about the changes in economy. There are following points which clear about its importance:

1. Profit of experience.
2. Safety from future
3. Utility Studies
4. Sales Forecasting 5. Budgetary Analysis
6. Stock Market Analysis
8. Process and Quality Control
9. Inventory Studies
10. Economic Forecasting
11. Risk Analysis & Evaluation of changes.
12. Census Analysis

**Components of Time Series:-**

The change which are being in time series, They are effected by Economic, Social, Natural, Industrial & Political Reasons. These reasons are called components of Time Series.

- Secular trend :-
- Seasonal variation :-

- Cyclical variation :-
- Irregular variation :-
- Secular trend:

The increase or decrease in the movements of a time series is called Secular trend. A time series data may show upward trend or downward trend for a period of years and this may be due to factors like:

- increase in population,
- change in technological progress ,
- large scale shift in consumers demands,

For example,

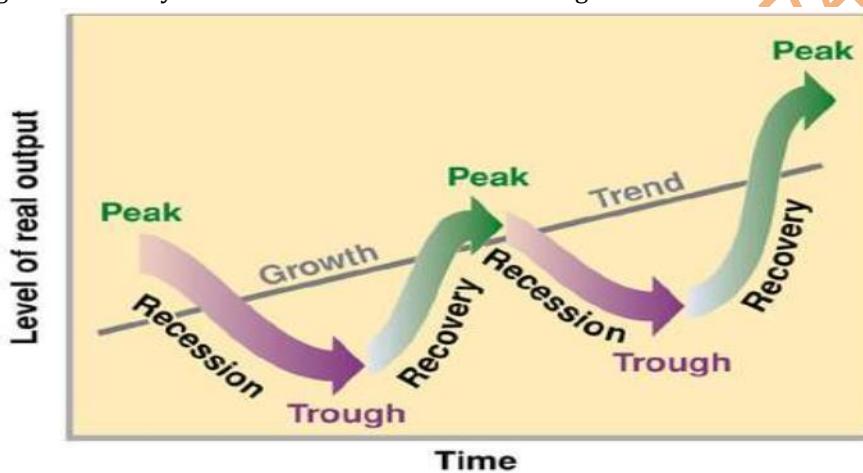
- population increases over a period of time, price increases over a period of years, production of goods on the capital market of the country increases over a period of years. These are the examples of upward trend.
- The sales of a commodity may decrease over a period of time because of better products coming to the market. This is an example of declining trend or downward.

**• Seasonal variation:**

- Seasonal variation are short-term fluctuation in a time series which occur periodically in a year. This continues to repeat year after year.
- The major factors that are weather conditions and customs of people.
- More woolen clothes are sold in winter than in the season of summer .
- each year more ice creams are sold in summer and very little in Winter season.
- The sales in the departmental stores are more during festive seasons than in the normal days.

**□Cyclical Variations:**

Cyclical variations are recurrent upward or downward movements in a time series but the period of cycle is greater than a year. Also these variations are not regular as seasonal variation.



A business cycle showing these oscillatory movements has to pass through four phases-prosperity, recession, depression and recovery. In a business, these four phases are completed by passing one to another in this order.

- **Irregular variation:** Irregular variations are fluctuations in time series that are short in duration, erratic in nature and follow no regularity in the occurrence pattern. These variations are also referred to as residual variations since by definition they represent what is left out in a time series after trend ,cyclical and seasonal variations. Irregular

fluctuations results due to the occurrence of unforeseen events like :

- Floods,
- Earthquakes,
- Wars,
- Famines

**□Time Series Model**

- Addition Model:

$$Y = T + S + C + I$$

Where:- Y = Original Data

T = Trend Value

S = Seasonal Fluctuation

C = Cyclical Fluctuation

Multiplication Model:

$$Y = T \times S \times C \times I$$

or

$$Y = TSCI$$

#### Measurement of Secular trend:-

- The following methods are used for calculation of trend:

Free Hand Curve Method:

Semi – Average Method:

Moving Average Method:

Least Square Method:

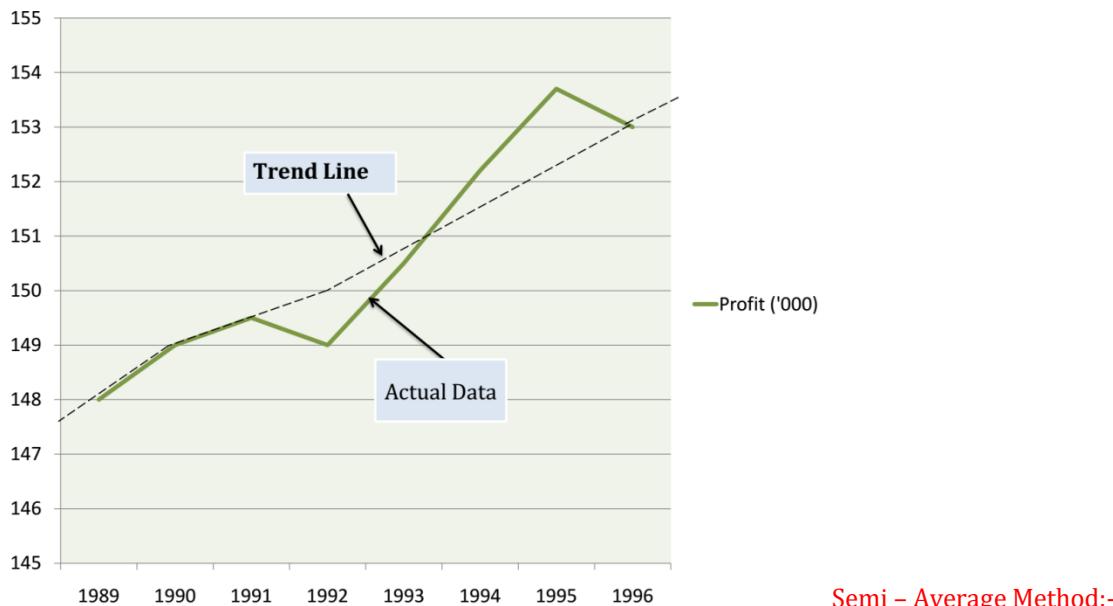
#### Free hand Curve Method:-

- In this method the data is denoted on graph paper. We take "Time" on 'x' axis and "Data" on the 'y' axis. On graph there will be a point for every point of time. We make a smooth hand curve with the help of this plotted points.

#### Example:

Draw a free hand curve on the basis of the following data:

Years	1989	1990	1991	1992	1993	1994	1995	1996
Profit (in '000)	148	149	149.5	149	150.5	152.2	153.7	153



#### Semi – Average Method:-

- In this method the given data are divided in two parts, preferable with the equal number of years.

For example, if we are given data from 1991 to 2008, i.e., over a period of 18 years, the two equal parts will be first nine years, i.e., 1991 to 1999 and from 2000 to 2008. In case of odd number of years like, 9, 13, 17, etc., two equal parts can be made simply by ignoring the middle year. For example, if data are given for 19 years from 1990 to 2007 the two equal parts would be from 1990 to 1998 and from 2000 to 2008 - the middle year 1999 will be ignored.

- Example:

Find the trend line from the following data by Semi – Average Method:-

Year	1989	1990	1991	1992	1993	1994	1995	1996
Production (M.Ton.)	150	152	153	151	154	153	156	158

There are total 8 trends. Now we distributed it in equal part.

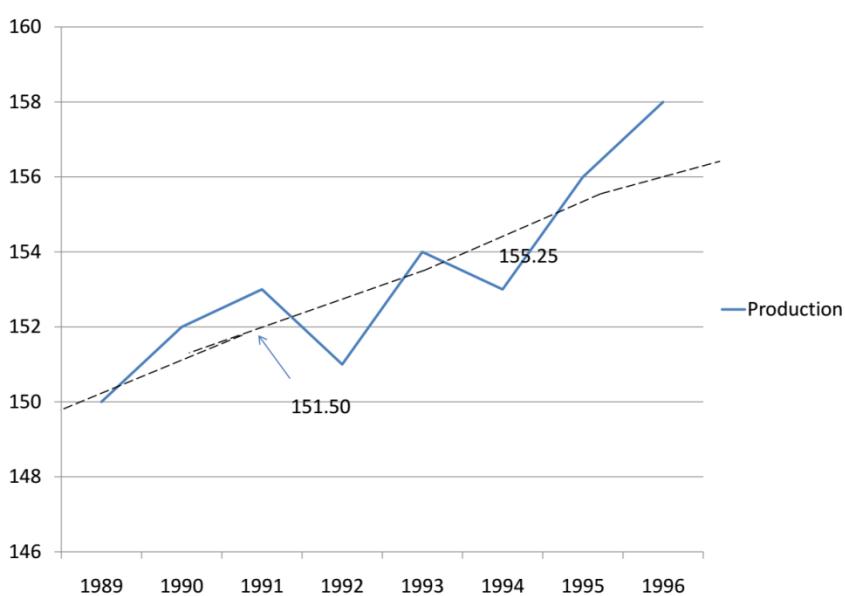
Now we calculated Average mean for every part.

$$\text{First Part} = 150 + 152 + 153 + 151 \div 4 = 151.50$$

$$\text{Second Part} = 154 + 153 + 156 + 158 \div 4 = 155.25$$

Year (1)	Production (2)	Arithmetic Mean (3)
1989	150	
1990	152	
1991	153	
1992	151	
1993	154	
1994	153	
1995	156	
1996	158	

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#### Moving Average Method:-

- It is one of the most popular method for calculating Long Term Trend. This method is also used for 'Seasonal fluctuation', 'cyclical fluctuation' & 'irregular fluctuation'. In this method we calculate the 'Moving Average' for certain years.

- For example: If we calculating 'Three year's Moving Average' then according to this method:

$$= \frac{(1)+(2)+(3)}{3}, \quad \frac{(2)+(3)+(4)}{3}, \quad \frac{(3)+(4)+(5)}{3}, \quad \dots$$

Where (1),(2),(3),..... are the various years of time series.

Example: Find out the five year's moving Average:

Year	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Price	20	25	33	33	27	35	40	43	35	32	37	48	50	37	45
Year	Price of sugar (Rs.)	Five year's moving Total			Five year's moving Average (Col 3/5)										
(1)	(2)	(3)	(4)												
1982	20	-	-												
1983	25	-	-												
1984	33	135	-												
1985	30	150	-												
1986	27	165	-												
1987	35	175	-												
1988	40	180	-												
1989	43	185	-												
1990	35	187	-												
1991	32	195	-												
1992	37	202	-												
1993	48	204	-												
1994	50	217	-												
1995	37	-	-												
1996	45	-	-												

**Least Square Method:-**

This method is most widely in practice. When this method is applied, a trend line is fitted to data in such a manner that the following two conditions are satisfied:-

- The sum of deviations of the actual values of  $y$  and computed values of  $y$  is zero

$$\sum (Y - Y_c) = 0$$

i.e., the sum of the squares of the deviation of the actual and computed values is least from this line. That is why method is called the method of least squares. The line obtained by this method is known as the line of 'best fit'.

$$\sum (Y - Y_c)^2 \text{ is least}$$

The Method of least square can be used either to fit a straight line trend or a parabolic trend. The straight line trend is represented by the equation:

$$Y_c = a + bx$$

Where,  $Y$  = Trend value to be computed

$X$  = Unit of time (Independent Variable)

$a$  = Constant to be Calculated

$b$  = Constant to be calculated

**Example:-**

Draw a straight line trend and estimate trend value for 1996:

Year	1991	1992	1993	1994	1995
Production	8	9	8	9	16

**Solution:-**

Year (1)	Deviation From 1990 X (2)	Y (3)	XY (4)	X <sup>2</sup> (5)	Trend $Y_c = a + bx$ (6)
1991	1	8	8	1	$5.2 + 1.6(1) = 6.8$
1992	2	9	18	4	$5.2 + 1.6(2) = 8.4$
1993	3	8	24	9	$5.2 + 1.6(3) = 10.0$
1994	4	9	36	16	$5.2 + 1.6(4) = 11.6$
1995	5	16	80	25	$5.2 + 1.6(5) = 13.2$
N= 5	$\sum x = 15$	$\sum y = 50$	$\sum xy = 166$	$\sum x^2 = 55$	

Now we calculate the value of two constant 'a' and 'b' with the help of two equation:-

$$\begin{aligned}\sum Y &= Na + b \sum X \\ \sum XY &= a \sum X + b \sum X^2\end{aligned}$$

Now we put the value of  $\sum X, \sum Y, \sum XY, \sum X^2$ , & N :-

$$\begin{aligned}50 &= 5a + 15(b) \quad \dots \dots \dots \quad (i) \\ 166 &= 15a + 55(b) \quad \dots \dots \dots \quad (ii)\end{aligned}$$

$$\begin{aligned}\text{Or } 5a + 15b &= 50 \quad \dots \dots \dots \quad (iii) \\ 15a + 55b &= 166 \quad \dots \dots \dots \quad (iv)\end{aligned}$$

Equation (iii) Multiply by 3 and subtracted by (iv)

$$\begin{aligned}-10b &= -16 \\ b &= 1.6\end{aligned}$$

Now we put the value of "b" in the equation (iii)

$$= 5a + 15(1.6) = 50$$

$$5a = 26$$

$$a = \frac{26}{5} = 5.2$$

As according the value of 'a' and 'b' the trend line:-

$$Y_c = a + bx$$

$$Y = 5.2 + 1.6X$$

Now we calculate the trend line for 1996:-

$$Y_{1996} = 5.2 + 1.6(6) = 14.8$$

**Shifting The Trend Origin:-**

- In above Example the trend equation is:

$$Y = 5.2 + 1.6x$$

Here the base year is 1993 that means actual base of these year will 1st July 1993. Now we change the base year in

1991. Now the base year is back 2 years unit than previous base year.

Now we will reduce the twice of the value of the 'b' from the value of 'a'.  
 Then the new value of 'a' =  $5.2 - 2(1.6)$

Now the trend equation on the basis of year 1991:

$$Y = 2.0 + 1.6x$$

### Parabolic Curve:-

Many times the line which draw by "Least Square Method" is not prove 'Line of best fit' because it is not present actual long term trend So we distributed Time Series in subpart and make following equation:-

$$Y_c = a + bx + cx^2$$

If this equation is increase up to second degree then it is "Parabola of second degree" and if it is increase up to third degree then it "Parabola of third degree". There are three constant 'a', 'b' and 'c'. Its are calculated by following three equation:-

### Parabola of second degree:

$$\sum Y = Na + b \sum X + c \sum X^2$$

$$\sum XY = a \sum X + b \sum X^2 + c \sum X^3$$

$$\sum X^2 Y = a \sum X^2 + b \sum X^3 + c \sum X^4$$

If we take the deviation from 'Mean year' then the all three equation are presented like this:

$$\sum Y = Na + C \sum X^2$$

$$\sum XY = b \sum X^2$$

$$\sum X^2 Y = a \sum X^2 + c \sum X^4 +$$

### Example:

Draw a parabola of second degree from the following data:-

Year		1992	1993	1994		1995	1996	
Production (000)		5	7	4		9	10	
Year	Production	Dev. From Middle Year (x)	xY	$x^2$	$x^2Y$	$x^3$	$x^4$	Trend Value $Y = a + bx + cx^2$
1992	5	-2	-10	4	20	-8	16	5.7
1993	7	-1	-7	1	7	-1	1	5.6
1994	4	0	0	0	0	0	0	6.3
1995	9	1	9	1	9	1	1	8.0
1996	10	2	20	4	40	8	16	10.5
$\sum Y = 35$		$\sum X = 0$	$\sum XY = 12$	$\sum X^2 = 10$	$\sum X^2Y = 76$	$\sum X^3 = 0$	$\sum X^4 = 34$	

We take deviation from middle year so the equations are as below:

$$\sum Y = Na + \sum X^2$$

$$\sum XY = b \sum X^2$$

$$\sum X^2 Y = a \sum X^2 + c \sum X^4 +$$

Now we put the value of  $\sum X, \sum Y, \sum XY, \sum X^2, \sum X^3, \sum X^4, & N$

$$35 = 5a + 10c \quad \dots \quad (i)$$

$$12 = 10b \quad \dots \quad (ii)$$

$$76 = 10a + 34c \quad \dots \quad (iii)$$

From equation (ii) we get  $b = \frac{12}{10} = 1.2$

Equation (ii) is multiply by 2 and subtracted from (iii):

$$10a + 34c = 76 \quad \dots \quad (iv)$$

$$10a + 20c = 70 \quad \dots \quad (v)$$

$$14c = 6 \text{ or } c = \frac{6}{14} = 0.43$$

Now we put the value of 'c' in equation (i)

$$5a + 10(0.43) = 35$$

$$5a = 35 - 4.3 = 5a = 30.7$$

$$a = 6.14$$

Now after putting the value of 'a', 'b' and 'c', Parabola of second degree is made that is:

$$Y = 6.34 + 1.2x + 0.43x^2$$

### Parabola of Third degree:-

- There are four constant 'a', 'b', 'c' and 'd' which are calculated by following equation. The main equation is  $Y_c = a + bx + cx^2 + dx^3$ . There are also four normal equation.

$$\sum Y = Na + b \sum X + c \sum X^2 + d \sum X^3$$

$$\sum XY = a \sum X + b \sum X^2 + c \sum X^3 + d \sum X^4$$

$$\sum X^2 Y = a \sum X^2 + b \sum X^3 + c \sum X^4 + d \sum X^5$$

$$\sum X^3 Y = a \sum X^3 + b \sum X^4 + c \sum X^5 + d \sum X^6$$

### Methods Of Seasonal Variation:-

- SEASONAL AVERAGE METHOD
- LINK RELATIVE METHOD
- RATIO TO TREND METHOD
- RATIO TO MOVING AVERAGE METHOD

## Seasonal Average Method

- Seasonal Averages =  $\frac{\text{Total of Seasonal Values}}{\text{No. Of Years}}$
- General Averages =  $\frac{\text{Total of Seasonal Averages}}{\text{No. Of Seasons}}$
- Seasonal Index =  $\frac{\text{Seasonal Average}}{\text{General Average}}$

### EXAMPLE:-

- From the following data calculate quarterly seasonal indices assuming the absence of any type of trend:

Year	I	II	III	IV
1989	-	-	127	134
1990	130	122	122	132
1991	120	120	118	128
1992	126	116	121	130
1993	127	118	-	-

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### Solution:-

#### Calculation of quarterly seasonal indices

Year	I	II	III	IV	Total
1989	-	-	127	134	
1990	130	122	122	132	
1991	120	120	118	128	
1992	126	116	121	130	
1993	127	118	-	-	
Total	503	476	488	524	
Average	125.75	119	122	131	497.75
Quarterly Turnover seasonal indices 124.44 = 100	101.05	95.6	98.04	105.03	

- General Average =  $\frac{497.75}{4} = 124.44$

4

$$\text{Quarterly Seasonal variation index} = \frac{125.75 \times 100}{124.44}$$

So as on we calculate the other seasonal indices

## Link Relative Method:

- In this Method the following steps are taken for calculating the seasonal variation indices
- We calculate the link relatives of seasonal figures.

Link Relative:  $\frac{\text{Current Season's Figure} \times 100}{\text{Previous Season's Figure}}$

- We calculate the average of link relative for each season.
- Convert These Averages in to chain relatives on the basis of the first seasons.
- Calculate the chain relatives of the first season on the base of the last seasons. There will be some difference between the chain relatives of the first seasons and the chain relatives calculated by the previous Method.
- This difference will be due to effect of long term changes.
- For correction the chain relatives of the first season calculated by 1<sup>st</sup> method is deducted from the chain relative calculated by the second method.
- Then Express the corrected chain relatives as percentage of their averages.

## Ratio To Moving Average Method:

- In this method seasonal variation indices are calculated in following steps:
- We calculate the 12 monthly or 4 quarterly moving average.
- We use following formula for calculating the moving average Ratio:

$$\text{Moving Average Ratio} = \frac{\text{Original Data}}{\text{Moving Average}} \times 100$$

Then we calculate the seasonal variation indices on the basis of average of seasonal variation.

### **Ratio To Trend Method:-**

- This method based on Multiple model of Time Series. In It We use the following Steps:
- We calculate the trend value for various time duration (Monthly or Quarterly) with the help of Least Square method
- Then we express the all original data as the percentage of trend on the basis of the following formula.

$$= \frac{\text{Original Data} \times 100}{\text{Trend Value}}$$

Rest of Process are as same as moving Average Method

### **Methods Of Cyclical Variation:-**

- Residual Method
- References cycle analysis method
- Direct Method
- Harmonic Analysis Method

### **Residual Method:-**

- Cyclical variations are calculated by Residual Method . This method is based on the multiple model of the time Series. The process is as below:

- (a) When yearly data are given:

In class of yearly data there are not any seasonal variations so original data are effect by three components:

- Trend Value
- Cyclical
- Irregular

- (b) When monthly or quarterly data are given:

➤ First we calculate the seasonal variation indices according to moving average ratio method.

➤ At last we express the cyclical and irregular variation as the Trend Ratio & Seasonal variation Indices

## Measurement of Irregular Variations

- The irregular components in a time series represent the residue of fluctuations after trend cycle and seasonal movements have been accounted for. Thus if the original data is divided by T,S and C ; we get I i.e. . In Practice the cycle itself is so erratic and is so interwoven with irregular movement that is impossible to separate them.

### MISCELLANEOUS POINTS

- F distribution is coined by George W Snedewr in Honour of Sir Ronald A Fisher.
- Chi square (non- parametric test) concept given by Karl Pearson.
- Concept of normal distribution is given by De Mouire and person involved in this are Laplace, Gauss and W J Yoden.
- Concept of Regression is given by Sir Francis Galton in 1877.
- Concept of T- distribution is given by WS Gosset.
- Median and mode are positional average.
- Arithmetic mean, geometric, harmonic & weighted average mean are mathematical average.
- OGIVE CURVE and frequency polygon are also 2d diagrams.
- OGIVE represent cumulative frequency and histogram frequency distribution and frequency polygon means many angled diagrams.
- 3D, three dimensional diagrams are those cubes, sphere, cylinders and cuboid.
- Numerical characteristics of population are parameters and sample are sample statistics/ estimators.
- Random sampling method is also called probability sampling method.
- Non random sampling method is also called non-probability sampling method.
- The larger the sample the more accurate will be the research.
- Increasing the sample size decreases the sample error.
- Type 1 error by rejecting a true null hypothesis and it is also known as producer error, alpha or level of significance.
- Type 2 error by accepting the false null hypothesis also called consumer error ( $1 - \beta$ ) beta, power function of test or power curve, power of test.
- Standard error (SE) is standard deviation of the distribution of the sample mean.  $S.E = \sigma / \sqrt{N}$
- In a normal distribution curve, since the curve is a bell shaped & symmetrical i.e.  $\text{mean} = \text{median} = \text{mode}$
- Total area under normal probability curve is 1 (.5 + .5)
- Since curve is symmetrical co efficient of kurtosis is 3 mesocratic.
- Range of distribution is  $-\infty$  to  $\infty$  but practically it is  $60\sigma$ .
- Point of inflexion is  $x = \mu \pm \sigma$
- Leptokurtic ( $<3$ ), Platokurtic, Mesocratic = 3.
- Area  $\mu + 1\sigma = 68.27\%$ ,  $\mu + 2\sigma = 95.45\%$ ,  $\mu + 3\sigma = 99.73\%$
- Z (STANDARD NORMAL DISTRIBUTION) =  $X - \mu / \sigma$
- Concept of BINOMIAL DISTRIBUTION is given by JAMES BERNOULLI.
- Concept of POISSON DISTRIBUTION is given by SIMEON POISSON. In this the value of mean and variance is  $(0,0)$
- Standard deviation is also known as root Mean Square Deviation.
- Standard deviation is affected by change of scale & independent of change of origin.
- Positively skewed = mean > median > mode.

- Negatively skewed= mode>median>mean.
- Balance pattern= mean=median=mode.
- Skewness means lack of symmetry or asymmetrical distribution.
- Concept of coefficient of Skewness given by Karl Pearson.
- Confidence interval 95% = 1.96, 99% = 2.56/2.58
- Z test is also called standard normal variable test, standard normal deviate test, approximation test, large scale test.
- One tailed test is also known as direction test or right tailed test. F test and chi square test is one tailed test.
- Two tailed test is called left tailed test as direction is not mentioned.
- T test is also called t distribution & student t test, exact test, small test.
- Chi square is a non-parametric test
- Chi square lies from 0 to  $\infty$
- F test in which value of numerator is always greater than denominator.
- Concept of correlation is given by Karl Pearson.
- Correlation denotes from R and its values lies between -1 to 1
- Spearman Correlation Given By Edward Spearman.
- Edward Spearman Denotes Correlation From P (Rho)
- Karl Pearson correlation formula is  $\text{cov}(xy)/\sigma_x \sigma_y$ .
- Correlation is independent of both change of scale & origin.
- Regression is affected by change of scale & independent of change of origin.
- R<sup>2</sup> is coefficient of determination.
- Coefficient values lies between 0 to 1.
- $R^2 = b_{xy} * b_{yx}$
- Regression shows a causal effect i.e. cause & effect relationships.
- Parametric test: - Z Test, T Test, F Test.
- Non Parametric Test Or Distribution Free Test: - Sign Test, Median Test, Mann Whitney U Test, run test, KS Test, Chi Square Test.
- PAIRED T TEST is used in management training, special coaching's, product
- Paired T Test Is Also Known As Bivariate Normal Distribution.
- Nominal scale=mode used, ordinal scale= mode & median, interval & ratio scale = mean, median, mode.
- Kendall coefficient – In 1955 rank correlation co-efficient evaluate the degree of similarity between two sets of ranks given to a same set of objects, non-parametric test.
- Friedman test= 0 to 1

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